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U.S. Fish & Wildlife Service



CELEBRATING A
CENTURY
of CONSERVATION

Fish & Wildlife News

National Wildlife Refuge System Centennial

Special Edition

Spring 2003



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Prelude



Okefenokee NWR, Georgia
George Gentry/USFWS



Mississquoi NWR, Vermont
Hollingsworth/USFWS



Haukalau Forest NWR, Hawaii
Jim Clark/USFWS

Director's Corner: Looking Back, Looking Forward



This issue of *Fish and Wildlife News* celebrates the centennial of the National Wildlife Refuge System. It shares just a few of the thousands of stories about the refuge system, but I hope it provides a glimpse of our employees' passion for conserving the nature of America. I know many of you have worked hard to ensure that our centennial celebration is a success and I deeply appreciate your efforts and encourage you to continue promoting the system.

Theodore Roosevelt understood that the quality of the future depends on the actions of the present. Foresight is requisite in striking a sustainable balance between the needs of humans and those of wildlife. It was in fact the market hunting of water birds for their plumage that led Roosevelt in 1903 to establish the first National Wildlife Refuge. His legacy, the National Wildlife Refuge System, is now one of the finest feathers in the cap of conservation.

The NWRS centennial is a good time to reflect on the achievements of our predecessors. It also presents an opportunity to consider the conservation challenges that lie ahead. In commemorating the past, we can also begin to forge the future.

One of my primary goals is to increase awareness of the many opportunities that refuges offer to the public. Any activity that puts people in contact with nature is important, and refuges provide many opportunities, including birdwatching, wildlife observation, nature photography, and hiking.

It is also my firm belief that hunting and fishing will continue to be a key to the success of conservation. Hunters and anglers have been the backbone of wildlife conservation from the beginning. Their chosen recreation will continue to instill the lasting respect for nature and wildlife on which wildlife conservation was founded.

Because a person really has to know something before honestly respecting it, education is another priority. Wildlife refuges already serve as outdoor classrooms; we need to continue developing lesson plans for the American public. As we progress in the field of conservation, we learn more about increasingly complex issues. It is our responsibility to impart our growing body of knowledge on how ecosystems work, for example, through the classrooms that refuges can really be. As science provides us with a more intimate understanding of nature, our respect for it inevitably grows.

Finally, we must nurture existing and potential relationships with partners; they've always helped foster our conservation successes, including the NWRS. As refuges assume the national spotlight during our centennial celebration, it is a great opportunity for States and other partners to highlight the contributions they've made to conservation. Conservation has always depended on a spirit of cooperation. Non-profit organizations, volunteers and friends groups, hunters and angler organizations have all played instrumental roles in conserving America's fish and wildlife resources. The Service is grateful to these traditional partners and remains open to establishing new partners.

As we look back on the last century and start planning for the next, let's focus on what essentially enabled the success of the National Wildlife Refuge System: a deep concern for wildlife; friends with like interests; and, the guiding light — a sense of responsibility for the future.

Steve Williams

A System of Lands for Wildlife and People, for Today as Well as Tomorrow



*Florida Panther NWR, Florida
Florida panther
George Gentry/USFWS*

As I prepare to take the reins of the National Wildlife Refuge System, I look back on what has already been accomplished with awe, and look ahead to the challenges we face with confidence. I know, coming in, that our people are the most important assets of the refuge system. I know that their intelligence, their passion for the resources in their trust, and the sometimes incredible hours they are willing to work will make the accomplishments of our future every bit as bright as the conservation victories of the past 100 years.

As some of you may know, I've never actually been a manager in the National Wildlife Refuge System. I have, however, been the first employee to set foot on many, many refuges in a career that, since 1977, has given me the opportunity to acquire lands for refuges in all 50 states, and led to my accepting the position of Chief of Realty in 1986.

There have been few experiences in my life more satisfying than those many additions to the National Wildlife Refuge System. Each one was an accomplishment that I could see, could measure, could walk upon. I've been honored to play a part in the permanent conservation of these special places, these places for all time, these lands for the benefit of wildlife and the enjoyment of the public today and for generations to come.

If I had the space here, I could certainly think of at least 50 of these refuges that occupy often-visited pages in the scrapbook of my memory. Let me share just a few of them with you.

I was still a college student at West Virginia University when I wrote the background paper that would later be used as the basis for the establishment of one of those special places. On October 22, 1994, the words on that paper came to life in the form of Caneel River National Wildlife Refuge, the landmark 500th unit in the refuge system.

Although it's not a refuge per se, I'm also extremely proud of the part I had to play in buying the land where the National Conservation Training Center stands. I'm confident that this magnificent facility will help us continue to produce the kind of employees that have made the refuge system what it is today.

Perhaps the proudest moment in my land-acquisition career was the completion of the Phoenix Indian School/Collier land exchange, the largest ever accomplished by the Department of the Interior. That acquisition of more than 120,000 acres led to the establishment of two Florida refuges: 10,000 Islands NWR and Florida Panther NWR. I spent so much time shuttling back and forth to Florida while the negotiations inched along that the DEA actually suspected me of drug smuggling!

So I'm not exactly a newcomer to the refuge system. I understand its history and I recognize the management challenges ahead. And I believe that we can more easily meet those challenges if we keep a few guiding principles in mind.

First, and I know this is a drum you'll often hear beating in these pages, we have to remember to communicate with our current partners, and to always be on the lookout for more. The men and women that make up our volunteer and friends groups; the states and our tribal partners; and many of the citizens of the communities surrounding each refuge, share our love for these lands. We must always be mindful of ways to include them in what we do, to let them help us and, in doing so, help themselves. After all, they often have as great an interest in, and as vital a stake in, the health of the refuge system as we do.

Second, we must remember that our refuges *are* unique. In addition to our "wildlife first" focus, we are an actively managed system. Our refuges are not shut away under glass. We work with our lands, study them, manage them, and continually evaluate that management with the goal of providing maximum value to fish and wildlife... and to people.

That last word leads to my final principle. Remember our focus on wildlife-dependent recreation. The National Wildlife Refuge System is a system for conservation rather than preservation. Certainly our mission is to protect the lands under our trust, but we don't aim to lock them up. Rather, we are conserving these treasures for the use and enjoyment of all Americans; for those of us fortunate enough to be sharing this Centennial year, as well as for generations yet unborn.

*Bill Hartwig, outgoing Regional Director,
Minneapolis, Minnesota*

Future of the Refuge System



Lacassine NWR, Louisiana
Karen Hollingsworth/USFWS

This Centennial issue of the *Fish and Wildlife Service News* is full of the history of the National Wildlife Refuge System. As a second generation Fish and Wildlife Service employee, I take great pride in our heritage and our century of accomplishments in conserving fish and wildlife. We have a lot to be proud of and reason to celebrate.

I have been fortunate to be at the helm of the Refuge System during a time of record growth in our operations and maintenance budgets, but also sobered by the magnitude of the needs yet unfulfilled. I believe we now have a solid foundation for the Refuge System's second century. Our mission is wildlife conservation. Our key constituencies are defined in our priority public uses — hunters, anglers, wildlife photographers, and those who want to watch, teach and learn about wildlife will have places where their activities get top billing. And as we continue to put wildlife conservation first, opportunities for these wildlife dependent activities will abound.

What excites me the most is what lies ahead for the Refuge System. Times have changed as the Refuge System has grown. Wildlife management is now more science than art. New disciplines and technologies have evolved. Our refuge staffs have changed from a few jack-of-all-trades refuge managers and assistants to diverse and multi-disciplinary staffs of experts. We have wildlife biologists, fire ecologists, planners, computer system experts, visitor service professionals, law enforcement officers and other specialists on field stations. Our maintenance and administrative professionals have tools and technologies about which their predecessors could not even have dreamed. Increasingly, we come from all cultures and all racial, ethnic and economic backgrounds. Our equipment and facilities are in the best shape ever. We don't yet have all of this everywhere, but we are headed in the right direction.

There is one major reason we are headed in the right direction. Our 1998 gathering at Keystone charted a clear course. A year of hard work and reflection culminated with the first historic meeting of all the managers of the national wildlife refuges, the Service leadership, and many of our partners. Together we laid out a vision of how we would take the Refuge System to a better place. We committed that plan to writing in *Fulfilling the Promise*. We have stayed true to the course and are making great strides.

One of the biggest challenges facing us is the need to continue to protect habitat in a way that is both scientifically and fiscally sound. The Service's dedication to "saving dirt" is the bedrock of our conservation efforts. But as we have grown the refuge system over time, we have not always acquired land strategically. That is changing as the work of three Promises teams and collaboration with our colleagues in Migratory Birds and Coastal programs is bringing better science to bear. Over the next several years, I see our acquisition efforts being guided more by spatial data analysis and modeling than by the opportunity of a willing seller. I see a continued growth of innovative partnerships using a variety of acquisition tools, coupled with our private lands programs, protecting habitat on landscape scales. We are beginning to look at habitats that are underrepresented in protected areas, pro-actively looking at protecting fish and wildlife before their numbers decline. These efforts will provide us with a long term plan for the strategic growth of the refuge system. Our new Land Management Research Demonstration Areas will leverage our own scientific expertise with others in the research world. These refuges will be models of land stewardship science, and they will share their knowledge with the world. The techniques that are developed and refined on these refuges will benefit not only refuge managers, but all those managing land for wildlife.

All of our conservation work requires the support of the American people we serve. The Refuge System's second century begins with volunteers and community partnerships at the heart of our conservation strategies. I see a Friends group for every refuge before the end of this decade. I know Service employees and volunteers will explore new ways to fight invasive species. We will survey and study fish, wildlife, and plants together. Perhaps most importantly, together we will teach children about the natural world and help to raise the next generation of conservationists.

The themes repeat themselves — wildlife, habitat, people. They are the echos of our mission and they reflect the promises we made at Keystone. We will need the strength and commitment of continued leadership, and that is, perhaps, where I find the greatest confidence. Every time I visit the Refuge Academy, I am energized by meeting the new refuge professionals who will guide the Refuge System in the future. The good news is I see so many possibilities.

*Dan Ashe, outgoing Chief of Refuges,
Washington, D.C.*

Fulfilling the Promise for One Hundred Years

Since 1903, the National Wildlife Refuge System has evolved into the largest and most complex network of lands managed for wildlife and the public. The challenges and commitments faced by staff and supporters of the Refuge System have been monumental. We saw a glimpse of pride at the Keystone Conference, a meeting four years ago in the mountains of Colorado that catalyzed a new vision for the Refuge System — *Fulfilling the Promise*.

In March 1999, *Fulfilling the Promise (Promises)* was published, and contains ideas, thoughts, and words from hundreds of people defining how the Refuge System needs to evolve to meet the many challenges it faces. There are 42 *Promises* recommendations under three broad areas of Wildlife and Habitat, People, and Leadership. Through great dedication and resolve, many teams and individuals are translating our vision into a reality that affects all staff, our visiting public and partners, and finally, the resources for which we are stewards.

The results of *Promises* can be seen everywhere, and our actions continue to grow. The blue goose is now found on more than just boundary signs—it is on logos in exhibits, brochures, and presentations. Since Keystone, there have been national workshops for refuge biologists and visitor services specialists, and smaller workshops/meetings for others. The Leadership Development Council, an integral part of *Promises*, has been working on many issues dealing with staff recruitment, development, and retention; developing products that help all disciplines and employees — maintenance workers, managers, biologists, visitor service specialists, law enforcement officers, and fire and realty staff. For example, the Council created guidelines to make it easier to understand how to go from entry level jobs to top positions in each career track, giving staff viable grades towards which they could aspire.

It is a complex and daunting challenge to manage 95 million acres spread out across the country as a system of refuges. Not only are we doing it, but we are developing ways to do it better. We now have a blueprint for how to step down national goals to individual refuges for wildlife populations, habitat, and biodiversity — the context for all of our management. We also have recommendations to answer the following tough questions:

- Where and how will we expand our current refuges, or create new ones?
- What set of data do all refuges need to plan and do their work?
- How can we manage and use the data we already have?
- How do we deal with the waves of invasive species that are wrecking habitat?
- How can we provide wildlife-related recreation to our millions of visitors without ruining the resources?
- With thousands of people wanting to help refuges, how do we best use our volunteers and partners?

These are only a few of the issues that are being tackled under *Promises* (more information can be found at <<http://sii.fws.gov/r9refuges/>> or <<http://refuges.rmis.fws.gov>>). How can you commit? Read and act on the *Promises* document. Join an Action Team and get more involved. It will take the ongoing commitment of all to ensure the vision of *Promises* becomes a daily reality, and that the National Wildlife Refuge System remains vital to an ever changing world.

*Paul F. Steblein, Fulfilling the Promise Coordinator,
Arlington, Virginia*



I went to work for refuges in 1949 on the just established Stillwater NWR. That was a summer assignment between my Jr. and Sr. years in college. That first summer, I happened to walk in the refuge office after hours to find the Refuge Manager, Thomas C. Horn, and a very overweight man standing in his shorts and changing from field to meeting clothes. Horn said, "Dave, meet J. Clark Salyer." I knew who Salyer was. He was not the least bit embarrassed with his situation and instantly said, "How would you like to come to work for us permanently?" Obviously, Horn had put in a good word for me, although he denied it.

*David B. Marshall
Retired*

Keeping the Service in the Fish & Wildlife Service

At 100 years of age and 35 million annual visitors, the Refuge System recognizes public use is here to stay. And thanks to the Refuge System Improvement Act, it's the law.

The Refuge System Improvement Act of 1997 changed this situation in two important ways. First, the new law replaced the inexact “wildlife-wildlands oriented” criteria for a more precise legal standard giving priority to “wildlife-dependent” activities of hunting, fishing, wildlife observation, photography, environmental education and interpretation. Equally important, the Improvement Act mandated a more rigorous compatibility standard that required the refuge manager to approve an activity in writing and gain the concurrence of the Regional Refuge Chief.

Before the Improvement Act, guidance for refuge visitors bordered on multiple-use. Today's revised mission statement is a much better reflection of the Refuge System's “wildlife first” focus:

The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

But if the Improvement Act did much to guide the direction of visitation to refuges, other problems remain. National wildlife refuges are the front yard of the Fish and Wildlife Service where 35 million Americans meet the agency each year. But the Refuge System has had a chronic ambivalence toward visitors. The Refuge System's view of visitors often reflected a culture dominated by wildlife biologists, many of whom prefer working with animals rather than people. But when those animals occur on lands managed for the people who own them, attitudes must change.

And the Refuge System's bittersweet attitude toward people has changed. As the Improvement Act clarified priority uses, the Volunteer and Community Partnership Act of 1998 championed local involvement. From a few Audubon chapters and cooperating associations a decade ago, the Refuge System's extended family has grown to include more than 200 “Friends” groups and similar support organizations. Each is a reservoir from which the fortunate refuge draws talent, energy, inspiration and labor, and the benefits of having a trusted voice in the community.

Regrettably for a System that's been around for a century, some refuges are still years behind in providing basic public infrastructure—signs, brochures, rest rooms, boardwalks, and wildlife viewing aids. Congressional language in 2002 reminded us that the Refuge System's niche is providing “on-the-ground refuge experiences for visitors and modest visitor/education centers and visitor contact stations.” This was anticipated in the Refuge System's *Fulfilling the Promise* (1999), which noted,

“ . . . the focus of most refuge public use facilities should not be on creating more vicarious wildlife experiences but on getting people in closer contact with refuge habitat and wildlife. A long-range strategy . . . is needed to better describe public use deficiencies and articulate public use priorities, including visitor centers, to Congress.”

Lake Klamath NWR, California
Hollingsworth/USFWS



Refuge managers are often the face of the Refuge System. Their attitudes toward visitors provide the public persona of these areas. Without a firm hand on the tiller, a refuge's budget may sink as funds which should support hunting, fishing and wildlife viewing are diverted to cope with law enforcement, search-and-rescue, and lifeguards needed to support inappropriate activities. Encouraging the right uses is the best way managers can avoid becoming discouraged by fighting non-wildlife recreational interests seeking a venue for activities better suited to non-refuge lands.

Acting more like a teenager than a centenarian, the Refuge System is enjoying a growth spurt in its Centennial season, revitalized by the Improvement Act and the Volunteer and Community Partnership Act. Its seminal vision document, *Fulfilling the Promise*, has emerged as the field guide to the future. From its birth at Pelican Island to save birds from people, the Refuge System enters its second century with a new mission that sees people as the solution, not the problem.

The National Wildlife Refuge System came of age in a simpler, more rural America where multi-generational families lived together, mothers worked at home and fathers taught their sons hunting and fishing. Today the Refuge System finds itself in a multi-ethnic, urban America of single-parents and dual-career couples, where extreme sports and computer games compete for young people's time. When leisure is limited and technology ensures no one is out of reach, the Refuge System's greatest challenge in the next 100 years may be to reach out to those raised on virtual reality, and show them the real virtues of places timeless and natural.

*Mike Boylan, Supervisory Refuge Program Specialist,
Anchorage, Alaska*

*To me, the National Wildlife Refuge
System means:*

*There is hope for saving wildlife
species*

*There will always be a quiet place I
can go to relax and restore my soul*

*There is hope for saving mankind
My grandchildren will appreciate*

what we have protected

*Bruce Arrington, Biologist,
ARM Loxahatchee NWR*



*Arapaho NWR, Colorado
Virginia Heitman/USFWS*



*Pelican Island NWR, Florida
George Gentry/USFWS*



*Pelican Island at sunset
Ryan Hagerty/USFWS*

Timeline of Refuge Creation

Karen Hollingsworth/USFWS



■ Pelican Island NWR, FL
Number of Refuges 1

Dave Menke/USFWS



■ Clear Lake NWR, CA
Number of Refuges 26

Karen Hollingsworth/USFWS



■ Red Rocks Lake NWR, MT
Number of Refuges 90

Karen Hollingsworth/USFWS



■ Montezuma NWR, NY
Number of Refuges 124

©Jim Rondaugh



■ Kofa NWR, AZ
Number of Refuges 170

- 1903** Pelican Island ■
- 1904** Breton
- 1905** Passage Key
Wichita Mountains
Stump Lake
Huron
- 1907** Quillayute Needles
Shell Keys
Flattery Rocks
Three Arch Rocks
Copalis
- 1908** Island Bay
Pine Island
Matlacha Pass
Malheur
Chase Lake
Lower Klamath
Key West
- 1909** Hawaiian Islands
Minidoka
Cold Springs
Deer Flat
Culebra
Farallon
National Bison Range
- 1911** Clear Lake ■
- 1912** Green Bay
Fort Niobrara
- 1913** Anaho Island
Gravel Island
- 1914** National Elk Refuge
- 1915** Dungeness
Mille Laes
Big Lake
- 1916** North Platte
- 1921** Caloosahatchee
Ninepipe
Sullys Hill
Pablo
- 1924** Blackbeard Island
- 1925** Upper Mississippi River
- 1926** Johnston Island
- 1927** Savannah
McKay Creek
- 1928** Upper Klamath ■
Tule Lake
Pathfinder
- 1929** Bear River
Benton Lake
Cedar Keys
- 1930** Salt Plains
Cape Romain
Sonny Bono Salton Sea
Wolf Island
- 1931** Crescent Lake
St. Marks
Fallon

- 1932** Swanquarter
Bamforth
Hutton Lake
Long Lake
- 1933** Blackwater
- 1934** Mattamuskeet
- 1935** Red Rock Lakes ■
Squaw Creek
Oregon Islands
Lake Otis
Lake Andes
Arrowwood
Sand Lake
Sheyenne Lake
Muleshoe
Valentine
Hart Mountain
Chautauqua
Delta
Rice Lake
Waubay
Rose Lake
Lostwood
Lacreek
School Section Lake
J. Clark Salyer
Medicine Lake
Trempealeau
Upper Souris
White River
Lake Isom
Des Lacs
Seney
- 1936** Okefenokee
Desert
Charles M. Russell
Bowdoin
Kellys Slough
Tewaukon
Swan Lake
Bosque del Apache
Wood Lake
Camas
Willapa
Ardoch
Storm Lake
Wild Rice Lake
Yazoo
Patuxent Research Refuge
Turnbull
Bitter Lake
Tamarac
- 1937** Montezuma ■
Sacramento
Moosehorn
Aransas
Lacassine
Bear Butte
Silver Lake
Lake Thibadeau
Bombay Hook
Rabb Lake
Sabine
Agassiz
Ruby Lake
Pea Island
Union Slough
- 1938** Black Coulee
Back Bay
Hewitt Lake
Cape Meares
Great White Heron
West Sister Island
Tybee
Wheeler

- 1939** Kofa ■
Little Pend Oreille
McLean
Johnson Lake
Piedmont
Hiddenwood
Sibley Lake
Little Goose
Half-way Lake
Lost Lake
Necedah
Susquehanna
Lords Lake
Brumba
Hobart Lake
Edwin B. Forsythe
Pleasant Lake
Canfield Lake
Carolina Sandhills
Shell Lake
Bone Hill
Lake George
Dakota Lake
Lake Patricia
Hutchinson Lake
Stewart Lake
Rock Lake
Maple River
Buffalo Lake, ND
Lake Zahl
Camp Lake
Lambs Lake
Lake Ilo
Florence Lake
Cottonwood Lake
Lake Nettie
Appert Lake
- 1940** Noxubee
Lake Alice
Cabeza Prieta
- 1941** Horicon
Pretty Rock
Willow Lake
Reelfoot
Stoney Slough
White Lake
Havasu
Lake Mason
Imperial
Springwater
Sunburst Lake
Snyder Lake
San Andres
Wintering River
Creedman Coulee
Tomahawk
Kenai
Chassahowitzka
Parker River
- 1942** Halfbreed Lake
Hailstone
Lamester
Santee
- 1943** Santa Ana
Missisquoi
Chincoteague
- 1944** Great Meadows
Colusa
Monomoy
Slade
Columbia
Mingo
- 1945** J.N. "Ding" Darling
Sutter
Tennessee



■ *Loxahatchee NWR, FL*
Number of Refuges 220



■ *DeSoto NWR, IA*
Number of Refuges 239



■ *Seedsdakee NWR, WY*
Number of Refuges 284



■ *Sevilleta NWR, NM*
Number of Refuges 339



■ *Mississippi Sandhill Crane NWR, MS*
Number of Refuges 361

- 1946** Tishomingo
Hagerman
Laguna Atascosa
- 1947** Crab Orchard
Wertheim
Middle Mississippi River
Great River
Port Louisa
Two Rivers
Michigan Islands

1948 Stillwater

- 1951** Arthur R. Marshall
Loxahatchee ■
Pinellas
Merced

1952 Monte Vista

- 1953** Presquile
Saddle Mountain
Shiawassee

- 1954** Elizabeth A. Morton
Kirwin
National Key Deer
Martin

- 1955** Quivira
McNary

1956 Audubon

1957 Holla Bend

- 1958** DeSoto ■
Klamath Marsh
Catahoula
Iroquois
Buffalo Lake, TX
Pixley
War Horse

- 1959** Erie
Fish Springs

- 1960** Izembek
Great Swamp
Modoc
Mackay Island
San Juan Islands
Ouray
Kern

- 1961** Ottawa
Moody
Washita
Wapanocca

- 1962** Harris Neck
Delevan
Eastern Neck
Cross Creeks

- 1963** John Heinz at Tinicum
Merritt Island
Prime Hook
Alamosa
Anahuac
Lake Woodruff
Pahrnagat

- 1964** Choctaw
William L. Finley
Hatchie
Eufaula
Pee Dee
Cibola
Kootenai
Lee Metcalf
Cedar Island
Clarence Cannon
Toppenish
Cedar Point

- 1965** Seedsdakee ■
Browns Park
Grays Lake
Baskett Slough
Sherburne
Ankeny
Conboy Lake

- 1966** Las Vegas
Muscatatuck
Ridgefield
Flint Hills
Maxwell
Brazoria
Rachel Carson

- 1967** San Luis
Target Rock
Arapaho
UL Bend

- 1968** Seatuck
St. Vincent
Pocasse
Bear Lake
Grulla
Amagansett
San Bernard
Oyster Bay
Hobe Sound

- 1969** Buck Island
Fisherman Island
Wassaw
Umatilla
Mason Neck

- 1970** Sachuest Point
Sequoyah
Ninigret
Nomans Land Island

- 1971** Conscience Point
St. Johns
Wallops Island
Julia Butler Hansen

- 1972** Thatcher Island
Attwater Prairie Chicken
Pearl Harbor
Meredosia
Plum Tree Island
Lewis and Clark
Wapack
Hanalei
Seal Island

- 1973** Sevilleta ■
Pond Island
Humboldt Bay
Supawna Meadows
Nantucket
Ocoquan Bay
Franklin Island
Nansemond
Great Dismal Swamp
Salinas River
Block Island
Swan River
Rose Atoll
Huleia

- 1974** San Pablo Bay
Don Edwards San Francisco Bay
Hopper Mountain
Oxbow
Seal Beach
Petit Manan
Jarvis Island
Baker Island
Howland Island
Nisqually
Egmont Key
Trustom Pond
Cabo Rojo

- 1975** Mississippi Sandhill Crane ■
Optima
Felsenthal
Big Stone
Pinckney Island
Ellicott Slough
Hillside
D'Arbonne
Karl E. Mundt

- 1976** James Campbell
Desecheo
Kakahaia
Minnesota Valley

- 1977** Green Cay
Morgan Brake

- 1978** Panther Swamp
Texas Point
Sheldon
Upper Ouachita
Becharof
Bear Valley
Featherstone
Sauta Cave

- 1979** Lower Rio Grande Valley
Lower Suwannee
Grasslands
Crocodile Lake
Moapa Valley
Fox River
Bon Secour



■ Kanuti NWR, AK
Number of Refuges 404



■ San Bernadino NWR, AZ
Number of Refuges 409



■ Cape May NWR, NJ
Number of Refuges 453



■ Balcones Canyonlands NWR, TX
Number of Refuges 486



■ Canaan Valley NWR, WV
Number of Refuges 500

- 1980** Kanuti ■
Kodiak
Arctic
Antioch Dunes
Alaska Peninsula
Koyukuk
Nowitna
McFaddin
Alaska Maritime
Kirtlands Warbler
Banks Lake
Cross Island
Mathews Brake
Butte Sink
Lower Hatchie
Togiak
Selawik
Yukon Flats
Castle Rock
Tijuana Slough
Overflow
Tetlin
Innoko
Watercress Darter
Yukon Delta
- 1981** Fern Cave
Bogue Chitto
- 1982** San Bernardino ■
Blue Ridge
Protection Island
- 1983** Crystal River
Harbor Island
Bandon Marsh
Massasoit
Big Boggy
Pierce
- 1984** Sandy Point
Alligator River
Currituck
Eastern Shore of Virginia
Kilauea Point
Ash Meadows
- 1985** Hakalau Forest
Chickasaw
Stewart B. McKinney
Willow Creek - Lurline
Tensas River
Buenos Aires
Ozark Plateau
Bitter Creek
Coachella Valley
- 1986** Little Sandy
Atchafalaya
Steigerwald Lake
Cache River
- 1987** Little River
San Joaquin River
John Hay
Pilot Knob
- 1988** Sunhaze Meadows
Cameron Prairie
Sweetwater Marsh
Lake Ophelia
Midway Atoll
- 1989** Cape May ■
John H. Chafee
Hamden Slough
Sacramento River
Grand Bay
Driftless Area
Bond Swamp
Florida Panther
Logan Cave
Laguna Cartagena
- 1990** Roanoke River
ACE Basin
Cypress Creek
Bayou Sauvage
Ohio River Islands
Grays Harbor
St. Catherine Creek
Pocosin Lakes
Franz Lake
- 1991** Dahomey
Archie Carr
North Central Valley
Neal Smith
Ozark Cavefish
Siletz Bay
James River
Tallahatchie
Nestucca Bay
- 1992** Balcones Canyonlands ■
Wallkill River
Bayou Cocodrie
Grand Cote
Handy Brake
Rocky Mountain Arsenal
Tualatin River
Two Ponds
Rydell
Great Bay
Marais des Cygnes
Marin Islands
Kealia Pond
Mortenson Lake
Lake Umbagog
- 1993** Guam
Crane Meadows
Emiquon
Bill Williams River
Deep Fork
Cokeville Meadows
Bald Knob
Leslie Canyon
- 1994** Canaan Valley ■
Patoka River
Lake Wales Ridge
Stone Lakes
Big Muddy
Pond Creek
Big Branch Marsh
Trinity River
- 1995** Mashpee
- 1996** Mandalay
Ten Thousand Islands
San Diego
Rappahannock River Valley
- 1997** Key Cave
Waccamaw
Boyer Chute
Blackfoot Valley
Silvio O. Conte
Black Bayou Lake

- 1998** Aroostook
Colorado River
Clarks River
- 1999** Navassa Island
Shawangunk Grasslands
Lost Trail
Whittlesey Creek
- 2000** Guadalupe-Nipomo Dunes
John W. and Louise Seier
Northern Tallgrass Prairie
Dakota Tallgrass Prairie
North Dakota
Big Oaks
Caddo Lake
Cat Island
- 2001** Detroit River International
Kingman Reef
Palmyra Atoll
Coldwater River
Bayou Teche
Assabet River
Oahu Forest
Vieques
- 2002** Red River
Cahaba River

Shaping the NWRS: 100 Years of History

The First 75 Years: A Varied and Colorful History

Excerpts from the Refuge's 75th Edition
of *Fish and Wildlife News*



President Theodore Roosevelt
USFWS

Like many good ideas, it started small.

Three acres, more or less, depending upon the ebb and flow of the tides and the shift of the winds.

When Theodore Roosevelt set aside Florida's Pelican Island as a bird sanctuary in 1903, perhaps few people had an idea that he was setting in motion a complex chain of events that, 75 years later, would result in a National Wildlife Refuge System of 34 million acres — the world's largest network of lands managed for the benefit of wildlife.

California had the honor of being the first State to establish a wildlife refuge, when its legislature passed a law to set aside Lake Merritt in 1870. In 1852, an enterprising settler named Samuel Merritt had acquired the land near Oakland and converted a slough into the lake.

This historic event in the history of the refuge movement wasn't even noticed beyond this locality, however. This waterfowl sanctuary, later a park, is now in the heart of Oakland's high rise business district.

The Federal idea had really started back in 1872 when Yellowstone National Park was set aside, chiefly for protection of the area's hot springs and geysers. Hunting and timber cutting were prohibited as well, which accomplished what many wildlife protectionists were seeking.

While the buffalo slaughter raged on the plains around Yellowstone, a remnant herd of 250 lived in their mountain retreat within the park virtually unnoticed. By 1885, they would be the only surviving wild buffalo in the United States.

President Benjamin Harrison set aside 13 million acres of western public lands as forest preserves in 1891, once again raising the potential of establishing a rudimentary network of areas for protection of wildlife. The forests had neither administration nor protection, however; and although trespassing was forbidden, it was not enforced.

In 1892, Harrison withdrew Afognak Island in Alaska as a timber reserve and the U.S. Bureau of Fisheries promptly had it declared a salmon preserve. The island is now part of Katmai National Monument, the second largest area in the National Park System.

Other scientists bent Harrison's ear and convinced him that the bays and rocks adjacent to Afognak should be included as refuges for sea lions and sea otters. Though, again, largely in name only, this was the first public area specifically set aside as a wildlife refuge.

And when the Yellowstone Park Protection Act was herded through Congress by Iowa's John F. Lacey in 1894, Yellowstone Park became the first inviolate wildlife refuge in fact.

But it would take nine more years and a President named Roosevelt to put the whole business on a firm footing and establish what we know today as the National Wildlife Refuge System.

President Roosevelt might himself not have fully known what he was setting in motion when he asked as aide, "Is there any law that will prevent me from declaring Pelican Island a Federal Bird Reservation?"

Told there was not, he replied, "Very well, then I so declare it."

Theodore Roosevelt was no shrinking violet when it came to getting something done. And in 48 words closed with a flourish of his pen, he signed into law the first of 51 Executive Orders during his Presidency establishing wildlife refuges in 17 States and Territories from Puerto Rico to Alaska and Hawaii.

Theodore Roosevelt made greater use of the Executive Order than any President up to that time, and it took Congress many years to catch its breath and rein in that power that he had so forcefully brandished when it suited his ends.



*Fort Niobrara NWR, Nebraska
American bison
Hollingsworth/USFWS*



*National Bison Range, Montana
Pronghorn
Hollingsworth/USFWS*



*Upper Mississippi NWR, Iowa
American lotus
USFWS*

By that time, the National Wildlife Refuge System was an established fact.

Other refuges followed Pelican Island in short order — Breton...Stump Lake...Siskiwit...Huron... The hastily typed Executive Orders came so fast that some even went unpublished as official records. It still takes a special trip to the National Archives to look them up.

Government was simpler in those days.

On one day — February 25, 1909 — the President set aside a total of 17 different wildlife reservations throughout the Rockies and Far West, 13 of them in one Executive Order.

And two days before leaving office, Theodore Roosevelt was still setting aside wildlife refuges.

During the time a host of new laws and other government actions took place to add dimension and breadth to the concept of wildlife preservation.

On January 24, 1905, Wichita Mountains became the country's first national game preserve.

Over 18,000 acres from the Flathead Indian Reservation in Montana became the National Bison Range on May 23, 1908, and a nucleus herd of 80 buffalo was donated to the Federal Government by the American Bison Society.

In 1912, an order was issued protecting the birds of the Niobrara Military Reservation in Nebraska, making it, in effect, a bird reservation, and starting a long history of involvement by the military in wildlife management on the vast acreage that it controls.

The seed had been planted. But it was slow in germinating.

The years 1910-1916, after Theodore Roosevelt had left the White House, were a lull in the history of the refuge movement, with the number of refuges and the amount of government money increasing only slowly.

In 1916 all that changed with the passage of the Migratory Bird Treaty with Great Britain for the protection of birds flying between the United States and Canada. While most Americans' attentions were focused on weightier matters in 1916, the treaty stimulated greater interest in conservation activities. The 1918 Act which implemented the treaty contained no provision for refuges, however.

Meanwhile, in the drive to fuel the war machine, Americans plowed up much of the Great Plains for food, destroying many of the existing breeding grounds of waterfowl. Appropriations for conservation were cut.

The appropriations of \$1.5 million in 1924 for the purchase of Mississippi River bottomlands for a refuge marked the first time that Congress had expressly set aside money for the purchase of a general wildlife reservation. It became the Upper Mississippi River Wildlife and Fish Refuge.

In 1929 the battle for the legal authority to purchase and set up a migratory bird refuge system was met with the passage of the Norbeck-Andresen Migratory Bird Conservation Act. It authorized increasing appropriations from year to year and created the Migratory Bird Conservation Commission. Its passage wasn't a moment too soon.

For if the Great Depression was bad on people, it was worse on the ducks. Their prairie potholes, ponds, marshes, and wetlands dried up and blew away along with much of the rest of the Midwest.

Waterfowl reached their lowest numbers in recorded history. J.N. "Ding" Darling, Iowa cartoonist and later chief of the Bureau of Biological Survey, drew pictures of the impending extinction of the Nation's ducks and geese.



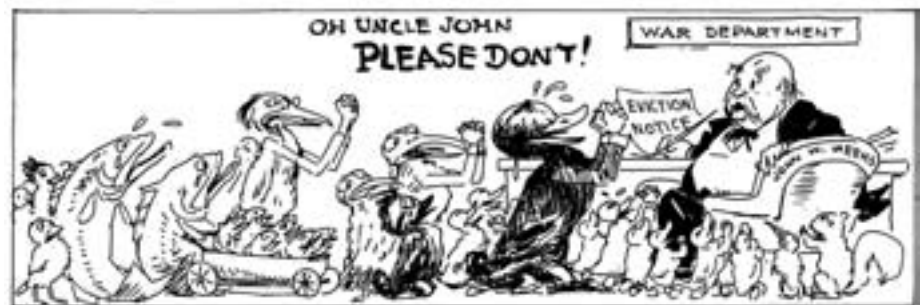
J.N. "Ding" Darling
USFWS

Darling wasn't alone in his thinking. Many of the country's eminent conservationists and wildlife biologists agreed with him. Though overshooting was a problem, the loss of prime waterfowl habitat was more serious.

The Refuge System was also withering on the vine. Funds to carry out the Migratory Bird Conservation Act became unavailable during the Depression. But Darling managed to change the course of refuge history, although President Franklin Roosevelt's pronouncements in support of ducks did not always square with the harsh realities of the Nation's desperate financial straits.

Darling and the two members of his Duck Committee set a goal of \$50 million for the purchase and restoration of submarginal land for wildlife, particularly migratory waterfowl.

They got quite a bit of that money for the Biological Survey, and embarked on a crusade that would revitalize the hard-pressed Survey and its refuges. It would end only when World War II interfered.



J.N. "Ding" Darling cartoon
The J.N. "Ding" Darling Foundation

*Why Drain Our Lakes To Make More Farms When We Are Already
Suffering From Over Production Of Farm Products?*

The Refuge System attracted a fair amount of notoriety in other respects during the 1930's and 1940's, if on a less auspicious level, and stories are still told about some of the more unusual incidents.

Like the time the renegade Rousseau brothers busted out of the Nevada State Prison and fled to the Sheldon National Antelope Range in the northwestern corner of the State in a stolen Reno taxi. They holed up at the Thousand Creek Ranch, where with the help of a cutting torch and saws they converted the Reno taxi into a truck with the boards from the dining room floor.

The duo used the truck for hauling beef and deer carcasses and assorted stolen loot for several months before a bad wreck anticlimactically ended their spree. The perimeter of the hole they cut out of the dining room floor can still be seen on the ranch.

When a passenger plane carrying Hollywood flame Carol Lombard slammed into the mountains of the Desert National Wildlife Range in southern Nevada in 1942, it was "Madam Sweeney" who was pressed into service. "Madam Sweeney" was a sure-footed refuge mule who had gained something of a reputation in those parts for her dependability when employees needed to traverse the rugged mountains around the wildlife range.

It was "Madam Sweeney" who carried Miss Lombard's body down from the mountains to a waiting Clark Gable who was there to receive the body.

Refuges during the Second World War were lonely, deserted places, for the most part, their manpower being siphoned off for the war effort and the refuge managers who were left having to wear the hats of numerous employees. Maintenance was cut drastically.

Congress ordered an end to the Civilian Conservation Corps in July 1942, and one year later virtually all of the 185 CCC camps and projects on refuges, other public lands, and Indian reservations had closed. CCC property was turned over to the War and Navy Department and almost 1,800 appointed CCC employees scurried to leave the CCC projects in the best possible shape before departing for other jobs.

And more than one refuge manager whose isolated station was along the Pacific or Atlantic coasts nervously scanned the horizon with their binoculars in those dark days after Pearl harbor and wondered ...

With good reason. Although it was not common knowledge along the West Coast because of the lid that had been clamped down on news, the Japanese were readying an attack against the area's forests and timber reserves.

The plan was to launch balloons carrying incendiary bombs from the Japanese islands, the theory being that prevailing winds would carry them across the Pacific where they would ignite fires up and down the American coast amid valuable stands of timber. The fires would also have the added effect of tying up American manpower battling the blazes.

More than one balloon made it. One landed at Sheldon National Antelope Range in Nevada. A pair of refuge employees spotted it but first mistook it for a patch of snow in the distance. Upon closer examination, they discovered what it was and wasted no time in notifying authorities. A Sunday School class in Oregon wasn't so lucky upon discovering a similar bomb and several of its members were killed when it exploded in their midst.

If some refuges were abandoned by most of their human protectors and left to the wildlife, others were beehives of activity for the duration. Also at Sheldon, the military set up gunnery ranges and proceeded to conduct target practice.

The Washington office of the Fish and Wildlife Service even got into the spirit of the war effort. In an effort to disperse government offices and create room in the Nation's Capital for the influx of military people, the Fish and Wildlife Service, the National Park Service, and the Bureau of Indian Affairs all were shipped out to Chicago. Their location? The 10th and 11th floors of the famed Merchandise Mart. It would be 1947 before the Service took up residence in the Main Interior Building for the first time.



While serving as refuge manager at Sacramento NWR Complex, Willows, CA, I received a phone call from the FBI office in Sacramento. The agent informed me that I was on "Squeaky" Fromme's "hit list." This was about the time she was making threats against President Gerald Ford. I was told later that the reason I was on her "hit list" is because I was managing hunting programs on the refuges, and she, apparently, was opposed to hunting.

*Jack Helvie
Retired*

From 1940 to 1954, there was little in the way of direct congressional appropriations for the acquisition and development of new wildlife refuges. There were some bright spots, however: In 1948, the Lea Act authorized wildlife management areas for growing feed for birds that had been raiding nearby farmer's fields in California. And in 1949, in an effort to get money for refuge rehabilitation that had been delayed by World War II, Congress raised the price of Duck Stamps to \$2.

Despite the lack of funds, the Refuge System continued to expand, largely through the use of suitable areas acquired by other Federal agencies for other public purposes. A breakthrough came with the Fish and Wildlife Act of 1956, which authorized the acquisition of refuge lands for the conservation and protection of all kinds of wildlife. The Endangered Species Preservation Act of 1966 provided the first specific authority to establish refuges for protection of vanishing wildlife. The National Wildlife Refuge System was officially designated that same year.

Since 1962, strong emphasis has also been placed on acquiring small pothole marshes in the northern prairie States that are able to produce large numbers of ducks. Almost 1.5 million acres of these small wetlands, called Waterfowl Production Areas, have been purchased or leased to prevent their destruction by drainage and conversion to non-wildlife uses.

Theodore Roosevelt would have been proud.

*David Klinger, Senior Writer/Editor;
Reprinted from Fish and Wildlife News, December, 1978.*

The Last 25 Years: Our Refuge System

The last 25 years of the National Wildlife Refuge System have been marked by tremendous changes, only a few of which can be highlighted in this brief article. Undoubtedly the Alaska National Interest Lands Conservation Act (ANILCA) caused the greatest physical transformation of our national refuge system. The passage of this act in 1980 created nine new refuges and consolidated and expanded seven more refuges. The end result was to add more than 53 million acres to the refuge system creating the two largest refuges in the system: Arctic NWR (19.5 million acres) and Yukon Delta NWR (19.1 million acres). The expansion of the Alaskan refuge system to almost 77 million acres presented great opportunities and challenges. Large intact ecosystems (including 18.5 million acres of designated wilderness) proved ideal habitat for wildlife. The inclusion of many native villages within the boundaries of some of these new refuges (43 villages in Yukon Delta NWR alone) required new outreach efforts by Service personnel to work with native peoples in conservation planning.

In contrast to the sparsely populated wilderness areas added to many Alaskan refuges, the last 25 years also witnessed a new initiative to create "urban refuges" within or near large metropolitan areas to provide human-wildlife interactions for that growing segment of the American population. John Heinz at Tinicum NWR in Philadelphia, Pennsylvania (est. 1972), Don Edwards San Francisco Bay NWR (est. 1972), Minnesota Valley NWR (est. 1976), and Rocky Mountain Arsenal NWR outside Denver, Colorado (est. 1989) are but four of many dramatic examples of the refuge system encompassing non-traditional habitat for wildlife protection and human enjoyment. Rocky Mountain Arsenal NWR was a particularly striking story, having emerged from decades of chemical manufacture as the "most polluted square mile in America" to become a refuge that now hosts bald eagles, coyotes, prairie dogs and mule deer. As more and more Americans reside in urban areas, the refuge system has evolved to meet our nation's changing wildlife needs.

Our last decade has been one of new milestones for the refuge system. Ninety years after its inception, the refuge system had grown from one 4-acre refuge to 500 refuges as Canaan Valley National Wildlife Refuge in West Virginia was established. Although West Virginia was the last state to obtain a national wildlife refuge it made up for lost time. In 1997 the National Conservation Training Center opened its doors in Shepherdstown, West Virginia providing a comprehensive training site for all our refuge employees.

We can't talk about the past 25 years without recalling our struggles with incompatible uses on refuges. A damning 1989 GAO report and the lawsuit that followed brought a rallying cry for organic legislation. The enactment of the National Wildlife Refuge System Improvement Act in 1997 is of tremendous historical significance. This "organic legislation" clarified the wildlife conservation mission of the refuge system.



*John Heinz NWR, Pennsylvania
Hollingsworth/USFWS*

It identified wildlife-dependent recreational uses that are given priority consideration, mandated a long-term refuge planning process, and clarified the process for determining the compatibility of refuge uses.

The following year, Congress enacted the Volunteer and Community Partnership Improvement Act, which help fuel the explosion of the Friends movement that has provided the refuge system with an unprecedented level of community and political support. In many ways, these forces combined to change our fundamental world view, from a perspective that keeping wildlife first meant keeping people out to today's approach where partnerships with citizens and communities are essential to wildlife conservation. We now recognize that people must be able to use and enjoy refuges in compatible ways if we are going to have their support.

The highlight of the past quarter century was the first ever gathering of all refuge managers, Service leadership, and our partners in Keystone, Colorado in 1998. It was an incredibly passionate week where we reflected on our past, considered the challenges we faced, and charted a vision for the future. That vision was captured with eloquent words in *Fulfilling the Promise*, which remains the strategic plan for the refuge system.

In hindsight the National Wildlife Refuge System has been a vast and successful land-based experiment. President Theodore Roosevelt could scarcely have envisioned that his 55 reservations and preserves would grow to be an integrated system of more than 95 million acres of prime wildlife habitat. His seed took root in the American imagination and the ongoing mission of the refuge system is a testament to America's devotion to wildlife.

*Mark Madison, Historian
Shepherdstown, West Virginia*

I take great pride in knowing my country's Federal government has set aside the largest amount of acreage of any nation for the primary benefit of wildlife. The National Wildlife Refuge System's 95 million acres is bigger than many whole countries. My life is enhanced by these bountiful public areas.

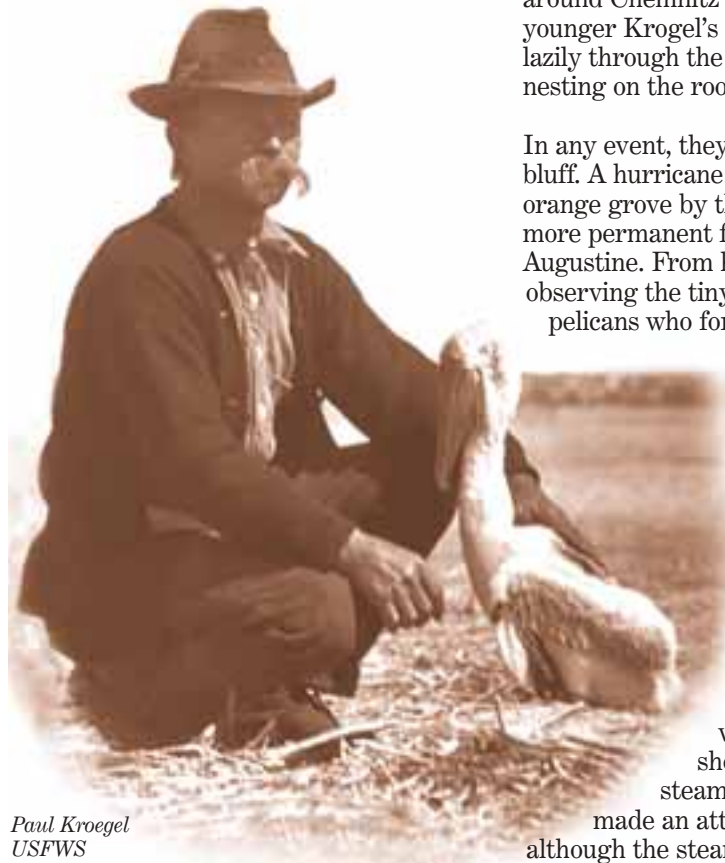
*Kash Schriefer, Special Agent,
Monroe, Louisiana*



*Rocky Mountain Arsenal NWR, Colorado
Hollingsworth/USFWS*

The First Refuge Manager

Excerpts from the Refuge's 75th Edition of *Fish and Wildlife News*



Paul Kroegel
USFWS

To learn about Paul Kroegel, one must come eventually to the Kroegel homestead and talk to Mrs. J. T. Thompson, his daughter and probably the best authority on what his life and times were like.

Mrs. Thompson, a slight, lovely lady in her 70's who punctuates her anecdotes with delightful bursts of girlish laughter, says it all began in Chemnitz, Germany.

"That's where they were living when my father's mother died suddenly on Christmas day, 1870," she recalls. "My father was only six-years-old at the time and his baby brother was two."

Distraught over his wife's death and at odds with an older brother who had inherited the family estate, Paul's father, Karl Freidrich Gottlob Kroegel, decided early in 1871 to make a new start in America. And so, in classic immigrant fashion, they came, surviving in the process a deadly outbreak of plague in Hamburg and a stormy passage across the Atlantic to New York.

During the next 10 years, the elder Kroegel, who had been a china maker in Germany, worked as a chef in New York and Chicago. "While they were in Chicago, my grandfather heard about the Homestead Act and became interested in moving to Florida," Mrs. Thompson says. "My daddy was 17 at the time and was learning the meat industry in Chicago and also learning to make furniture, boats and houses. Anyway, in 1881, they came to Florida and grandfather got a job in a famous resort hotel in Fernandina, near Jacksonville."

After a brief tenure feeding Yankee tourists at the hotel, the restless Kroegels bought a small sailboat and provisions and headed south in search of a homestead.

"They started down the St. John's River and there was no wind," says Mrs. Thompson. "It was in the spring and the mosquitoes come out early and just swarmed them. The wind never did pick up and they had to row all the way down the St. Johns to Salt Lake. At night they were scared to death because the panthers and the alligators were so close."

Mrs. Thompson believes the Kroegel's decision to stop near Pelican Island was rooted in their German past. Her grandfather, she reminds you, was used to the hilly country around Chemnitz and Barker's Bluff was the only hill around. Likewise, she ties the younger Kroegel's fascination with the hundreds of brown pelicans paddling their way lazily through the Indian River air to the fondness he had shown as a child for storks nesting on the roofs of Chemnitz.

In any event, they stopped and slapped together a rude palmetto shanty on top of the bluff. A hurricane whisked the shack away in 1882, but the Kroegels, having started an orange grove by this time, were there to stay. They soon replaced the shanty with more permanent frame structure made from lumber they brought in by boat from St. Augustine. From his vantage point atop the mount, Paul Kroegel would spend hours observing the tiny, 3-acre island that seemed so irresistible to the thousands of pelicans who for some reason preferred its beaten down mangrove trees as nest sites to all others in the vicinity.

During the 1880's and 1890's, Paul Kroegel entered young manhood — a slim man about 5 1/2 feet tall with piercing blue eyes and a fine blond mustache. His hair curiously enough was coal black — it had changed color following a bout with fever. Using the carpentry skills he learned in Chicago, he became a boat builder.

One must remember these were free-wheeling times. Game laws were practically non-existent. Plume hunters were devastating waterfowl in the Everglades to supply the fashion industry's demand for feathers. One observer pretty well summed up human behavior toward wildlife on Florida's waterways in the late 1870's when he reported: "Practically all tourists were armed with rifles, shotguns, revolvers, or all three. These armed men lined the rails of the steamboats and shot ad libitum at alligators, waterfowl, or anything that made an attractive target. There were practically no restrictions on shooting, although the steamers never stopped to gather in the game, but left it where it fell."

Mrs. Thompson remembers well her father's accounts of those days of trouble for his beloved pelicans: "The channel was such that boats had to go within 100 feet of Pelican Island. When the boats got close, the pelicans would just rise up and hover around them. And that's when people started shooting at the pelicans. Well, daddy saw what was happening and he just had to do something about it."

What he did was begin an intensive lobbying campaign on behalf of the birds.

"What my father wanted to do was get word through to President Roosevelt," Mrs. Thompson says. "He wanted Pelican Island to be a Federal reservation so he would have power to keep people off the island."

Somehow the word did get through. Federal protection was extended to the island by way of President Roosevelt's Executive Order of March 14, 1903. Two weeks later, Kroegel received another piece of paper that had been signed in Washington: "Mr. Paul Kroegel of the State of Florida is hereby appointed warden in charge of Pelican Island Reservation, Florida, in the Division of Biological Survey in the United States Department of Agriculture, at the rate of one dollar per month, to be paid from the fund appropriated for general expenses of biological investigations. This appointment takes effect on April 1, 1903."

Thus began the transition of Paul Kroegel, boatbuilder, to Warden Kroegel, protector of Pelican Island.

Mrs. Thompson says her father wasn't bothered by the rather penurious salary that went with his responsibilities. "He could tell people to stay off Pelican Island and that was worth a million dollars to him."

Lacking the benefit of a formal education in wildlife management, the new warden learned his craft the hard way. According to Mrs. Thompson, the Agriculture Department, in typical bureaucratic fashion, ordered Kroegel to post a large sign on the island proclaiming it and its feathered inhabitants to be wards of the government. The pelicans, of course, immediately left the island and didn't return until Kroegel, taking matters into his own hands, removed the offending sign in November 1904.

Eventually, Warden Kroegel evolved a simple modus operandi for protecting the island that proved reasonably successful, if wearying.

"The Department of Agriculture sent him this huge American flag," explains Mrs. Thompson with a laugh. "It was the prettiest thing I ever saw. They wanted him to put it up on the island, but he just laughed, knowing it would scare the pelicans away. Instead he put it on a flagpole near his dock. Whenever boats would come down the river, they would always blow their whistles to salute the flag. That give him his warning and when he heard a boat whistle he would jump up and get to the river and sail his boat to the island. It's a wonder he didn't die of ulcers."

Mrs. Thompson adds that her father usually took a 10-gauge shotgun along on these forays, in the event his mere physical presence failed to deter would-be marksmen intent on using the pelicans for targets. He used it more than once to warn off trigger happy yachtsmen.

Paul Kroegel was paid \$12 a year as the first employee of what became the National Wildlife Refuge System. He supplemented his income with farming and boat building. Paul Kroegel and George Nelson in a boat, 1920. USFWS/NCTC Archives. Mark Madison, Service Historian, NCTC



Kroegel's constant presence helped reduce harassment of the pelicans. The yachting crowd seemed to be getting the message. Unfortunately, the same couldn't be said for some local commercial fishermen.

"Towards the end of World War I, when food got scarce, the fishermen started a fuss, saying the pelicans were destroying the fishing industry and should be done away with," says Mrs. Thompson.

An editorial supporting the fishermen's contention appeared in the *Florida Times Union*. Dismayed, Warden Kroegel wrote a blunt rebuttal explaining that the pelicans fed primarily on menhaden, a fish of no significant commercial value at that time. That seemed to quiet the newspapers, but the fishermen sought to have the last word.

"Things quieted down for a while and then one night there was a northeaster," Mrs. Thompson recalls. "The wind was really blowing and howling, but dad said there was something wrong with the pelicans. Just as soon as dawn came, he fought his way over there — the river was awful rough — and when he got there he discovered that nearly all the pelicans had been clubbed to death. The fishermen put their boys on the island to do their dirty work. When my father saw that bunch of dying, crippled, lame birds it made him sick. When he came home he was white as a sheet."

Kroegel immediately telegraphed the Florida district game warden and as a result of their investigation court was convened quickly in Sebastian. Although the boys who had done the killing were minors, the presiding judge advised their parents that they, the parents, would go to jail if anything further happens to the pelicans. Fortunately, enough pelicans survived the slaughter to provide the nucleus of a healthy breeding population the next year.

On June 30, 1926, Paul Kroegel's days as a Federal warden were ended. The government politely terminated him on the grounds that the pelicans had abandoned the island (temporarily, as it turned out).

Mrs. Thompson likes to joke about this event. "Calvin Coolidge got rid of him for stingy purposes!" she snorts. She may have something there, for by this time the warden's salary after 23 years of faithful service had been upped to \$15 a month.

Kroegel died in 1948, but the little island he labored to protect continues to exert its strange pull on nesting pelicans. Biologists and birdwatchers, following the footsteps of such famous naturalists as Dr. Chapman, Ernest Thompson Seton, and Louis Agassiz Fuertes, still come to see the island and its birds. Baker's Bluff is gone and the river is wider, but judging from old photos not all that much else has changed.

Mrs. Thompson and her husband, J.T., are careful caretakers of the legacy of Pelican Island. They are anxious that history does not overlook what has done here — by the government and the Kroegel family — to further the cause of wildlife conservation.

*Phil Million, Migratory Birds and State Programs,
Arlington, Virginia*



It was early AM on Malheur NWR. I was responsible for checking the duck traps. As I approached one particular trap, I saw a hen mallard trying to move through bulrush on the shore next to the trap. I thought it was strange as ducks usually move around the perimeter, not smack in the middle of the densest part of the plant. I attempted to remove it from the precarious position it was in. As I began pulling it, I felt resistance but could not figure out why. I continued to pull and continued to feel resistance. Then I heard a growl from the other side of the bulrush. I soon figured out I was playing tug-of-war with a mink who had a hold on the duck from the other side. Needless to say, the mink won.

*Sally Gall, Refuge Operations
Specialist,
Buenos Aires NWR*

Pelican Island's First Survey

"Pelican Island is a muddy flat of 5 1/2 acres in the salt lagoon called Indian River. It has a few dead mangrove trees and one young palmetto tree, besides some aquatic plants. It is sometimes covered with water when the winds cause high floods. The east side is the highest, being about two feet in elevation."

*Amherst W. Barber;
Detailed Clerk of the General Land
Office, who surveyed Pelican Island
on March 14, 1903.*

The history of a once forgotten "muddy flat of five and a half acres" tells how the National Wildlife Refuge System came into being.

Back in 1859, a General Land Office survey of the Florida township that included Pelican Island described the island in only the most abstract terms. Like other islands nearby, Pelican Island was low in elevation, wet, full of mangroves and as such unfit for cultivation, according to the General Land Office Deputy Surveyor William S. Harris. In keeping with standard practices of the time, the deputy surveyor did not even bother to survey these islands. After all, the expense of doing so was seen as unwarranted, because they were thought to be worth so little!

So Pelican Island languished for more than four decades as unidentified public land. The island was already considered public domain since the State of Florida was ceded to the United States by Spain in 1819. If only these early surveyors had known that this island was destined to become a cherished national treasure.

At the turn of the century, public awareness of the need for conservation was clearly on the rise. At Pelican Island, feather hunters were slaughtering brown pelicans for their plumes, and the fashion industry was paying top dollar. Concerned about the fate of these seabirds, the American Ornithologist's Union appealed to the federal government for help.

A noted conservationist, President Theodore Roosevelt issued an executive order in March 1903 setting Pelican Island aside for the "preservation of native birds," and making it impossible for the land to be removed from the public domain.

As part of its appeal for help, the American Ornithologist's Union applied to the General Land Office for a survey. It was conducted less than a week after President Roosevelt issued his executive order. Surveyor Amherst W. Barber characterized Pelican Island as a "muddy flat of five and a half acres," perhaps unaware that he was witnessing the start of the greatest system of wildlife protection areas in the world.

*Stephen G. Kopach, Chief Land Surveyor,
Arlington, Virginia*



CCC Had Profound Effect on Refuge System



It was such an honor to work on Midway Atoll NWR, a place where our military service men and women served to protect our country during WWII and a place today where the Fish and Wildlife Service protects the extraordinary wildlife and natural resources.

*Laura Patrick, Endangered Species Biologist,
Long Island Field Office*

In just one year, 1939, 7,000 Civilian Conservation Corps enrollees at 35 camps in 27 states helped transform “biological deserts” nationwide into “areas of great attractiveness to wildlife.”

During the nine years of its existence, Franklin D. Roosevelt’s CCC ultimately left its mark on wildlife conservation and on 53 new national wildlife refuges by building bridges, dams, dykes, and other water control structures, as well as constructing wildlife shelters and nesting islands, and planting marsh and aquatic vegetation, and trees, shrubs and grasses.

“All these activities,” said Bureau of Biological Survey Director Ira N. Gabrielson in a 1936 press release, “will make the areas into better habitat for the birds — refuges in fact as well as in name.”

Other CCC work such as building truck hails, lookout towers, fire roads and service buildings was directed toward the same end by “making it possible for refuge supervisors to protect the birds more efficiently,” Gabrielson said.

More importantly for a nation on war footing, CCC enrollees also spent hundreds of thousands of hours training in truck, tractor and dragline operation, auto maintenance, welding, and handling dynamite.

And in a nation struggling to overcome the Depression, the CCC provided needed jobs to tens of thousands of young men.

At the same time, the Corps was established in 1933, a large wildlife refuge purchase program was begun; from 1933 to 1942, some 8 million acres of land were acquired for national wildlife refuge purposes, increasing total refuge land holdings to just over 9.5 million acres on 257 refuges. Much of this land was barren and even more was considered submarginal for wildlife purposes.

Improvements had to be made so that the refuges could support large concentrations of wildlife and be administered efficiently. It was in making these needed improvements that the CCC was of tremendous benefit to wildlife conservation.

President Roosevelt established the first three Bureau of Biological Survey (FWS) CCC camps in 1933 at Blackwater Migratory Bird Refuge in Maryland, Swanquarter NWR in North Carolina and St. Marks Refuge in Florida.

The wildlife benefits of the CCC were not limited to refuges. Every land management agency had CCC camps. Crews on national forests worked to improve conditions for the growth of trees; the National Park Service used CCC labor to make parks and monuments “attractive and suitable for wildlife,” and CCC work benefitted wildlife on lands administered by the Office of Indian Affairs, the Division of Grazing, and the Bureau of Reclamation.

The Refuge System owes an often-overlooked debt of gratitude to “the CCC Boys” for their contributions to wildlife conservation and the growth of the system. Perhaps this was summed up best by Robert Fechner, director of emergency conservation work for the Federal government, who said in 1936 that the CCC camps “have made possible the development of a system of refuges without equal in any other country.”

*Rachel F. Levin, Public Affairs
Minneapolis, Minnesota*

*Kevin Kilcullen, National Wildlife Refuge System,
Arlington, Virginia*

Refuge Pioneer: Tom Atkeson



Tom Atkeson
USFWS

Tom Atkeson spent almost fifty years working on refuges overcoming daunting physical obstacles. Tom began his career as a junior biologist at Wheeler NWR before enlisting in the United States Army during World War II. An anti-tank mine cost Atkeson his sight and both hands, yet after the war he returned to the Service rising to refuge manager at Wheeler. Atkeson overcame his challenges by employing a full-time driver and assistant and eventually memorizing the refuge trails and landscape. During his twenty-five years as refuge manager (1962-1987) Atkeson restored the local habitat, instituted the practice of cooperative farming for wildlife, reintroduced a number of native species, and, most importantly, inspired his colleagues to reach into their own “unconquerable soul” while fighting for wildlife. After being awarded Federal Handicapped Employee of the Year by President Reagan, Tom noted “If I do a good job I don’t mind getting credit for it, but I don’t want to be a successful cripple.” His successors at Wheeler and his colleagues in the refuge system can all attest to the fact that Tom did one heck of a good job in the fight for conservation.

Mark Madison, Historian,
Shepherdstown, West Virginia

From Air Boats to Rain Gauges



Air boats
J. Gulke/USFWS

The National Conservation Training Center Museum has grown rapidly in recent years. Holdings now include diverse objects, ranging from an old wall box telephone to documents signed by Presidents Theodore Roosevelt and John F. Kennedy. This large collection was put to good use by the producers of “Arctic Dance,” a film about Mardy Murie, the grandmother of the conservation movement, and the History Channel’s “Dangerous Missions,” an episode about Service Law Enforcement.

Because of our deep reverence for the Service’s heritage, and our success at preserving and sharing “family” heirlooms, other conservation icons such as the National Wildlife Federation and Ding Darling’s family have entrusted the museum with their treasures as well.

Preserving wildlife and habitat, and bringing endangered species back from the brink of extinction so they can re-establish viable populations has taken foresight and innovative, “out of the box” thinking. Did you know about all the things that Service employees have invented?

Clarence Birdseye discovered that the rapid freezing of food, combined with pressure, retained flavor when thawed. He owes his frozen food label “Birdseye” to Native Alaskans, who he noticed would freeze fish in Arctic ice. Cecil Williams and G. Horton Jensen at Bear River Migratory Bird Refuge came up with the air boat. The two-liter pop bottle bird feeder was invented by biologists Alex Knight and Willard M. Spaulding, Jr.

Our folks also designed many other implements catering to our special needs. Edgar C. Fearnow, Superintendent of Fish Distribution, came up with the Fearnow pail. Banding pliers were the creation of Ron Anglin at the Columbia NWR. Employees at the Okefenokee NWR designed the trail cutter. And the cannon net was invented by Herb Dill and Howard Thornsberry at Swan Lake NWR. To complete a unique mission takes a special breed of people. And fortunately, the history of this special breed of people has been maintained and preserved so that future generations can pick up the banner and carry us into the future.

At the National Conservation Training Center, visitors are welcome to take a look at the Service heirlooms that are on display throughout our corridors, or to wander down to the museum archives for a tour of the thousands of objects not on display. Whether you are enjoying the impressive Service sign collection on the walls of the bar, or looking at the old fish china that was once used in railroad cars and is now displayed in Instructional East, you cannot help but be impressed with our Service relics. They reflect the blood, sweat and tears that our predecessors have shed to conserve species and natural places. They also reconfirm our commitment to carry on with the same diligence and vigor. Keep on saving that old stuff scattered throughout your refuge, hatchery or office. It matters to you, and to all of us!

Jeanne M. Harold, Museum Curator,
Shepherdstown, West Virginia

A Refuge Hero Called “Mr. Conservation”

... refuges are the most important wildlife aid we have today and it is imperative that sufficient areas, adequately distributed, be reserved or restored while it is possible.

Ira Gabrielson, 1889-1977,
Wildlife Refuges, 1943

It is relatively easy to be a good leader when times are prosperous and resources are abundant, but in Ira Noel Gabrielson's era neither was the case, making his achievements all the more amazing. In 1916, Gabrielson came to work for the Biological Survey and carried out most of his work in the American West. He worked through the many divisions of economic ornithology, food habits research, predator and rodent control, and game management.

In 1935 Gabrielson was lured back East as Director Jay “Ding” Darling appointed him assistant Chief of the Division of Wildlife Research. But Darling had groomed Gabrielson to be his successor, and he became Chief of the Biological Survey in 1935. He retired in 1946 from the renamed U.S. Fish and Wildlife Service.

In the midst of the Depression and the waning years of drought and Dust Bowl, Gabrielson oversaw a huge expansion of the refuge system ably aided by his second in command, Chief of Refuges J. Clark Salyer. Of the existing 540 units in our NWRs, there were 63 refuges when Gabrielson took over as Director and 210 refuges by the time of his retirement. Firmly believing he enjoyed a once in a lifetime opportunity to re-create the refuge system, he was tireless in seeking out wildlife habitat.

He succeeded in getting a sizable contingent of “CCC boys” assigned to refuges to build an infrastructure that persists today on many refuges. In his spare time, he dedicated the important Patuxent Research Refuge in 1939, oversaw the first Refuge Manual establishing uniform policies and practices on the refuges in 1942, and wrote the definitive book on the system, *Wildlife Refuges*, in 1943.

One of my favorite artifacts in our NCTC archives is Gabrielson's annual report for the year ending June 30, 1943. In the first year of the war, Gabrielson oversaw a hugely diminished resource base. The CCC camps were ended in 1942 which removed tens of thousands of young men's labor, equipment, and supplies from the refuge system.

In the first year of the war, 20 percent of Refuge personnel were drafted to fight or work in war industries. It was not unusual to have two or three refuges overseen by one employee. The Service headquarters was moved to Chicago so most of the clerical staff quit rather than relocate. Conditions would only get worse as the war continued for 3 more years. But rather than quit or complain, Gabrielson persevered. He shifted resources to support the war effort and still expanded the refuge system through those years.

Gabrielson overcame some of our Nation's most demanding challenges, while ceaselessly fighting for our Nation's wildlife resources. At Patuxent in 1966, 50 years after he began his work with the Service, Gabrielson was finally honored with the naming of the Gabrielson Lab which houses much ornithology work — appropriate since he ended up donating some 8,000 birds skins to the research center. At the dedication of the new laboratory Gabrielson quipped that “either someone thought he was dead when he wasn't, or he was dead and didn't know it!”

Nothing could have been further from the truth. Gabrielson was alive to the possibilities of American conservation; his active battles in defense of wildlife earning him the honorific “Mr. Conservation.” Gabrielson's life stands as an inspiration and challenge as we approach the refuge centennial and seek to honor and, more importantly, expand upon his legacy.

Mark Madison, Historian,
Shepherdstown, West Virginia

Ira Noel Gabrielson
USFWS



Programs



Laguna Atascosa NWR, Texas
Ocelot, Hollingsworth/USFWS



Sevilleta NWR, New Mexico
Mexican wolf, Jim Clark/USFWS

The Duck Stamp: It's Not Just for Hunters — Refuges Benefit, Too



*Bombay Hook NWR, Delaware
Jamie Ritchie/USFWS*

As the National Wildlife Refuge System celebrates its 100th anniversary, it needs and deserves support now more than ever.

The National Geographic Society, in collaboration with the American Bird Conservancy, has just published a map of the Important Bird Areas in the United States. When I first looked at our IBA map, I was surprised at how many of these areas are, in fact, national wildlife refuges. As I thought about it, I realized that I do most of my birding on refuges, and this significant overlap of the Important Birding Areas and national wildlife refuges immediately took on a new level of importance to me.

Acquisition of land for the National Wildlife Refuge system is funded in part by sales of the Migratory Bird Hunting and Conservation Stamp, affectionately known as the Duck Stamp. I recently met with Vaughn Collins, Chief of the Federal Duck Stamp Office at the Service, and he told me that 98 percent of the revenue generated from sales of the Duck Stamp goes directly to acquisition of our national wildlife refuges. That is an extraordinary contribution.

Waterfowl hunters are required to purchase the Duck Stamp as part of their license to hunt waterfowl on or off any refuge. In 2003, the National Wildlife Refuge system will commemorate its centennial. Since 1934, or about seventy of those one hundred years, the hunting community alone has been funding the Federal Duck Stamp program. Today, the hunting community is growing smaller and sales of the Duck Stamp are down. The number of birders and wildlife enthusiasts visiting and using national wildlife refuges is increasing.

There are nearly 550 refuges in the United States. The cost of acquiring land to expand the system and the cost for personnel and maintenance increase each year. Refuges are home to more than 700 species of birds, more than 200 species of fish, and 250 threatened or endangered plants and animals, and provide vital stopover habitat for millions of migratory birds.

Collins and I agreed that the dedicated community of waterfowl hunters should no longer be expected to carry the full financial load for the Duck Stamp program. By purchasing a Duck Stamp, all of us who use national wildlife refuges have the opportunity to share in the funding of the National Wildlife Refuge System.

The Duck Stamp costs only \$15 and is available at most post offices and national wildlife refuges. Please join me and everyone in the birding community in the celebration of the one hundred years of the most successful conservation initiative in U.S. history. Buy a Duck Stamp, and go birding.

Mel M. Baughman

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Society.*

Mel Baughman is the Executive Editor of the *National Geographic BirdWatcher*, a lifelong waterfowl hunter and an avid birder with over 700 species on his life list.

Caught in a Web and Glad of It

“The Web of Life”



*Morton NWR, New York
Hollingsworth/USFWS*

It would be difficult to find a conservationist who hasn't heard or used that phrase at least once during his life. It's a good metaphor, eliciting the vision of the interconnectedness of all creatures great and small to sustain life. The metaphor works for the Service, too — one division connected to another, all needed to successfully preserve the mission of the Service — and that's why the National Wildlife Refuge Centennial is not just a celebration for those working on a refuge, it's a celebration for all of us working for the Service.

Directly or indirectly, we all have an effect on the well-being of the Refuge System, just as it affects our work, whether it be in personnel, budget, fisheries, migratory birds, or any other division. Without the web being intact, the refuge system wouldn't be what it has become, a crucial resource for wildlife and a place of pilgrimage for humans seeking nature at its best.

In our case, the programs administered by the Division of Bird Habitat Conservation (DBHC) have worked hand-in-glove with the Refuge System. The conservation partnerships — otherwise known as joint ventures — that have formed under the North American Waterfowl Management Plan have included goals and objectives in their implementation plans for refuge habitat restoration, enhancement, and expansion, and even for establishment. Joint ventures, working with others, have helped to bring millions of dollars into the Refuge System. In fact, more than 25 new refuges have been established in support of the Plan's waterfowl and habitat conservation goals, and Plan partnerships have been behind the annexing of many of the lands added to our older refuges.

The Federal Duck Stamp Program, now administered by the DBHC, has had a tremendous effect on the Refuge System. Beginning on August 22, 1934, Federal law mandated that individuals buy a Duck Stamp for the privilege of hunting their favorite migratory waterfowl. Some 635,000 hunters paid \$1 each for the stamps issued that year. Over time, the cost of a stamp has gradually risen to \$15. Duck stamps are a required purchase for hunters, but for collectors it is a good investment willingly made. Today, some 1.5 million stamps are sold each year. By 2001, the program's total income tallied approximately \$600 million. That money has been used to conserve some 6 million acres of wetlands in waterfowl production areas for inclusion in the Refuge System.

The DBHC's North American Wetlands Conservation Act Grants Program also has contributed to the health of the Refuge System. Since 1991, when the law was enacted and the Grants Program set into motion, 26 refuges have been involved in partnerships of 31 wetlands and associated-uplands conservation projects, where all or a part of each project's total effort and cost was spent on a refuge. These partners have spent more than \$59 million to protect, restore, and/or enhance more than 165,000 acres.

The Service has woven a web that gives us all a role to play in each others' work missions. We're glad to have been caught in that web and be a part of the National Wildlife Refuge System celebration!

*Dee Butler, Division of Bird Habitat Conservation,
Arlington, Virginia*



*Ten Thousand Islands NWR, Florida
Hollingsworth/USFWS*

Aquatic Resource Conservation on Refuges

In 2001, the Fisheries Program:

- Distributed 13.9 million fish for stocking on Refuges, providing over 404,600 angler-days.
- Conducted 104 surveys assessing 202 fish populations on Refuges.
- Participated in Comprehensive Conservation Plan development on 18 Refuges.

Source: Fisheries Information System

Fish are wildlife too!

The Silvio O. Conte National Fish and Wildlife Refuge in New England was established to conserve Atlantic salmon, American shad, river herring, and shortnose sturgeon, as well as migratory birds and other native species of the Connecticut River valley. The springs and streams on Ash Meadows NWR in Nevada harbor four endangered fish species: three pupfishes and the Ash Meadows speckled dace. Siletz Bay NWR on the Oregon coast supports large runs of coho and chinook salmon, steelhead and cutthroat trout, and provides nursery grounds for these anadromous species.

The Refuge System is also a tool for the Service's Fisheries Program to identify aquatic habitat for protection and to restore aquatic species. Biologists at the Fishery Resources Office (FRO) in Ashland, Wisconsin, identified a need to protect and restore spring-fed streams, spawning sites for the magnificent "coaster" brook trout of Lake Superior. A working group of biologists from states, tribes, and Canadian agencies found that degraded stream habitat was a major factor limiting the rehabilitation of coasters. The Ashland FRO proposed that a National Wildlife Refuge be established in the watershed of Whittlesey Creek, to protect and restore habitat for anadromous trout and salmon, and to reintroduce coaster brook trout under the guidance of the Lake Superior Brook Trout Rehabilitation Plan.

Meanwhile, habitat restoration is progressing under Refuge Manager Pam Dryer.

"We restored wetlands on the first tract that the Service acquired a couple of years ago, and we are planning to complete two Centennial forest and wetland restoration projects in 2003," said Dryer. "We are managing and restoring the watershed to benefit fish."

Cross-program collaboration between the Fisheries Program and the National Wildlife Refuge System achieves efficient and effective conservation results, as recognized by the Sport Fishing and Boating Partnership Council in their January 2002 report, *A Partnership Agenda for Fisheries Conservation*. The report calls for the Service to elevate aquatic resource conservation needs in land acquisition through more direct engagement between the Fisheries Program and the National Wildlife Refuge System.

This policy recommendation is already a fact of life on the south shore of Lake Superior, where cross-program engagement happens daily. The fact that the FRO Supervisor Mark Dryer and Refuge Manager Pam Dryer are a husband and wife team certainly enhances their opportunities for cooperation, but Whittlesey Creek NWR is a prime example, showing that Fisheries and Refuges have a lot to offer to each other.

Tom Busiahn,
Chief, Branch of Fish and Wildlife Management Assistance,
Arlington, Virginia



Whittlesey Creek NWR, Wisconsin
Coaster brook trout
Tom Busiahn/USFWS

To Conserve and Protect: Law Enforcement on Refuges



*Ding Darling NWR, Florida
George Gentry/USFWS*

The Division of Law Enforcement helps protect “wild things” and “wild places” in this country, including national wildlife refuges. Service special agents work in partnership with refuge officers to uphold Federal laws that safeguard fish, wildlife and their habitat.

Law enforcement has been vital to the refuge system since its beginnings. Paul Kroegel, the first refuge employee, was a warden dedicated to keeping plume hunters off of Pelican Island.

The refuge officers who have followed in Kroegel's footsteps are on the front lines when it comes to keeping both refuge resources and refuge visitors safe. The Division of Law Enforcement supports these efforts, providing investigative assistance on numerous cases each year.

Division personnel have teamed with Refuge staff to investigate crimes that range from illegal hunting, timber theft, and unauthorized use of refuge property to chemical dumping, drug production, and habitat destruction.

Two of the Service's most significant investigations involving environmental contaminants documented harm to refuge lands and refuge wildlife. The companies responsible for an oil spill off of Rhode Island's Ninigret NWR that killed more than 2,400 migratory birds were hit with \$8.5 million in fines and restitution. In central California, a large poultry operation paid more than \$1.2 million for pumping manure-tainted wastewater into wetlands on San Luis National Wildlife Refuge.

Supporting the refuge system can find agents working on many different types of cases and enforcement efforts. In Oklahoma, agents helped shut down a guiding operation that was luring elk off of Wichita Mountains National Wildlife Refuge to guarantee clients an easy “trophy kill.” Service investigators documented the theft of hundreds of Native Aleutian artifacts from Alaska Maritime NWR. When an arsonist struck twice early last year at Squaw Creek NWR, a special agent trained in arson investigations was able to obtain a sworn confession from the suspect, who also admitted setting 23 other fires in the surrounding community.

In some regions, agents help with refuge training programs, serving as instructors for firearms qualification, motorboat operator certification, environmental contaminants, and other subjects. Enforcement partnerships include efforts to identify powerlines on or near refuges that could electrocute raptors and working jointly with State counterparts to run wildlife check stations. In the Dakotas, agents and refuge officers police 1.3 million acres of wetland easements that preserve habitat for migratory birds. In Florida, officers from both programs conduct task force operations to protect endangered manatees from boat strikes.

Last year, the Division of Law Enforcement and the National Wildlife Refuge System joined forces to help safeguard Interior Department staff and facilities in the wake of the September 11 terrorist attacks. Service participation in the Federal Counter-Terrorism Security Team assembled for the 2002 Winter Olympics in Salt Lake City saw special agents and refuge officers working side by side to protect athletes and spectators from around the world.

The threats the Service faces today are more complex than those Paul Kroegel confronted a century ago. But together refuge officers and special agents are making sure that refuges remain special places for animals, plants, and people.

*Sandy Cleva, Division of Law Enforcement,
Arlington, Virginia*

Jewels of the Prairie Shine Like Diamonds in the Refuge System Crown

Centennial WPA: Another Reason to Celebrate

In 2001, the Service — assisted by a number of partners — purchased a new 600-acre tract in Minnesota's Big Stone County. The central feature of this new addition to the refuge system may be its 417-acre drained wetland, which the Service is in the process of restoring, but its most distinctive attribute is its name: Centennial Waterfowl Production Area.

For the Centennial, the wetland on Centennial WPA will hold water for the first time in generations. Besides restoring the wetland, the many partners also restored native grass to about 200 acres of upland. The Partnership is allowing the Service to acquire the land and restore the habitat while only paying 25 percent of the acquisition costs and 10 percent of the restoration costs.

*Steve Delehanty,
Morris Wetland Management
District, Morris, Minnesota*

On January 19, 1959, the Service purchased the first waterfowl production area, named the McCarlson WPA after its former owner, located in Day County, South Dakota. This began one of the most successful — yet often least understood — programs of the Service.

More than 40 years later, through the Small Wetlands Acquisition Program, an amendment of the 1934 Duck Stamp Act, the Service acquired more than 3,000 WPAs and 25,000 easements covering more than 1,000 square miles of wetland and prairie habitat. These WPAs, which total nearly two percent of the landscape in the Prairie Pothole region of North America, produce nearly 23 percent of the area's waterfowl and provide habitat for hundreds of species of flora and fauna. Although the Prairie Pothole region comprises only 10 percent of the duck breeding habitat in North America, between 50 and 75 percent of North American ducks are raised there.

The plan for WPAs was simple: purchase and restore prime wetland and grassland habitat across the vast prairie and surround these areas with hundreds of wetlands protected by permanent easements which prohibit drainage, filling and burning. Like J. Clark Salyer had done two decades before, Service realtors, working out of the back of well-worn sedans and station wagons, criss-crossed the prairies talking with farmers and ranchers about crops and livestock, negotiated at kitchen tables, and typed purchase and easement agreements on the hoods of their cars.

The result has been the protection of wetlands on more than 1.6 million acres of private land.

From the tiny 0.9-acre Medicine Lake WPA in North Dakota to the 3,733-acre Kingsbury Lake WPA in Montana, waterfowl production areas harbor an impressive diversity of life. These “jewels of the prairie” provide food and cover for waterfowl to nest and raise broods and the surrounding grasslands are home to birds that thrive in the six-foot tall grass.

Through careful management by the National Wildlife Refuge System, water levels at many waterfowl production areas can be raised and lowered to ensure migrating shorebirds find much needed food during their migrations. Joint management activities by Service biologists and landowners, including prescribed burning and seeding the black soil with native grasses help restore the prairie that past generations remember.

Waterfowl production areas are not just for animals; they also provide great opportunities for people. Open to the public by law, WPAs offer a variety of recreational opportunities that include hunting, fishing, wildlife observation and photography.

Under the guiding hand of biologists, educators and family members, waterfowl production areas give people a chance to see the mysteries and miracles of the natural world. Whether duck hunting with a parent, exploring the prairie with a class, or walking in the evening with family, waterfowl production areas improve the quality of life for all.

*Ken Garrahan, Prairie Wetland Learning Center,
Fergus Falls, Minnesota*



*Maynard Reese Waterfowl Production Area, Iowa
T.J.S./USFWS*

*J. Clark Salyer
USFWS*

Untrammelled by Man

At Gravel Island NWR, Caspian terns and red-breasted mergansers nest on 23-acre Spider Island in Lake Michigan. At Cape Romain NWR, loggerhead sea turtles and American alligators nest along the sandy beaches and salt marshes in a 29,000-acre area off the coast of South Carolina. At Cabeza Prieta NWR, Sonoran pronghorn and desert bighorn sheep roam over 800,000 acres in the middle of the Sonoran Desert. These animals make their homes in the National Wildlife Refuge System, on land protected as designated wilderness in part of the National Wilderness Preservation System (NWPS).

When Congress passed the Wilderness Act in 1964, it wanted to ensure that some lands would be “untrammelled by man” forever. Congress also wanted Americans to have opportunities for solitude or a primitive and unconfined type of recreation in perpetuity. Now, the Fish and Wildlife Service, Bureau of Land Management, Park Service and Forest Service manage these areas designated by Congress. The NWPS includes over 600 areas, and more than 105 million acres. The NWRS manages over 20 million acres of wilderness.

Many people picture wilderness as high elevation forested areas with snow-capped mountain ranges, grizzly bears and towering conifers. Much of the wilderness managed by the Forest Service would meet this description. In reality, the NWPS encompasses a wide diversity of wilderness areas. Our history of protecting migratory bird habitat presented the opportunity to include islands, marshes, and other wetland areas as wilderness. This helped the NWPS to better represent the diversity of American’s ecosystems.

What does a designation of wilderness on refuge lands and waters mean for visitors? Because the Wilderness Act prohibits the public use of motorized vehicles and equipment, visitors must rely on their own (or a guide’s) planning, stamina, and resources to experience wilderness. Many visitors relish the chance to “get away from it all.”

The Cabeza Prieta NWR encompasses the largest wilderness managed by the Service in the lower 48 states. Situated on the international border, and located in the heart of the Sonoran Desert, the refuge is unlike any other wild place in the Western Hemisphere. It’s a place where visitors can enjoy the magnificence of the Sonoran Desert, the high diversity of plant and animal species and varied geology and experience wilderness solitude rarely found elsewhere in the southwest.

Cabeza Prieta NWR, Arizona
Greg Knadle/USFWS

Nancy Roeper, National Wilderness Coordinator,
Arlington, Virginia



Ambassadors to Alaska: The Refuge Information Technicians Program



To me, national wildlife refuges mean enjoyment and diversity. I am honored to work at Togiak Refuge. Its diversity amazes me: 214 bird species, 31 terrestrial mammal species, 17 marine mammal species, 33 fish species, 502 plant species, one amphibian, amazing land features, and a mixture of Yup'ik Eskimos and non-natives.

*Rob MacDonald, Wildlife Biologist,
Togiak NWR*

As anyone who has been called upon to explain the work of the Service to the public knows, communicating with outside audiences, even when they share your language and culture, can be a challenge. Without the understanding and support of an informed public, all of the good science in the world will not enable us to protect the resources in our charge. But even in the most homogenous societies, politics, preconceptions and personalities contrive to close the ears and the minds of many of the people whom we most need to reach.

Imagine, the difficulties of taking those messages to stakeholders whose livelihood will be affected by our decisions. Imagine, that these men and women share a rich and proud culture that is decidedly different than that of most Service personnel, and that, for many of them, English is at best a second language.

This was the situation Region 7 faced in the early 1980's in parts of rural Alaska. Distrust was widespread, to the point that some villages refused to contribute information to Fish and Wildlife Service waterfowl surveys, or to participate in village meetings or Tribal council meetings. Some would not even allow Service personnel to offer school presentations in their communities.

In 1984, a new program was initiated on the Yukon Delta National Wildlife Refuge to address these problems. Hiring village residents under the Local Hire provisions of ANILCA, the Refuge Information Technician Program (RIT) was designed to collect local harvest data and share information about declining goose populations with Alaska villages. It was the first of its kind to be organized by the Service in Alaska, and is continuing successfully today, with RITs on duty in Togiak, Alaska Peninsula/Becharof, Yukon Delta, Selawik, Innoko, Tetlin and Arctic National Wildlife Refuges.

In the beginning, however, the Service's new RITs found that their roads would not necessarily be easy ones. Alaska Peninsula/Becharof Refuge Ranger Orville Lind, who started his career with the Service through the RIT program in 1991 and has since trained new RITs for Selawik and Alaska Peninsula Refuges, remembers: *When I was hired, most of the villagers I talked to didn't even know what the Service was. To most of them, a person in uniform was either a state trooper or with the Alaska Department of Fish and Game. And many of these people considered Fish and Game to be bad guys. They took away guns, and food, and sometimes family members accused of breaking the law while pursuing their subsistence lifestyles.*

So when I went to someone's door in my uniform and said, "Hi, I'm Orville with the Fish and Wildlife Service. I've come to check out how many birds you've harvested this season," I'd find myself staring at a closed door.

Alaska's RITs. Joe Asuluk (left), Michael Jimmy (center), Louie Andrew (right) and James Sipary (back). USFWS



The first challenge of the RITs, then, was to build trust. This was done by visiting each home in the village. And these visits had to be social, not right to the point with questions. Once we were invited into a home, we knew we had to spend time (not “government time” but “village time”), time talking with the family and sharing with them what we, and the mission of the Service, are about. We took that time to help the people understand why we need to do surveys, and how our biologists can use this information to make wise conservation decisions so that locals and their children can continue their subsistence lifestyles, and so others can continue to enjoy Alaska’s resources.

Did You Know . . . ?

The smallest refuge is .6-acre Mille Lacs NWR in Minnesota.

The largest refuge is 19.2 million acres Arctic NWR in Alaska.

North Dakota has the most NWRs of any state, 63 refuges covering 295,780 acres.

During the 1860’s a Pony Express station operated at Fish Springs NWR, to this day perhaps the most remote refuge in the lower 48 states.

The Aleutian islands of Attu and Kiska in Alaska Maritime MWR were seized by Japan in World War II, the only U.S. lands controlled by a foreign power since the Revolutionary War:

Language was another factor: We RITs could speak to the people in the villages in their own language (I for example, am of Aleut descent and speak the Aleutiq language), but interpreting government-speak into terms that made sense to the people was sometimes difficult. As we all know, if you don’t understand something it doesn’t stay with you. We soon learned that the rule applies to people, too: If they can’t understand you, you’ll lose them.

There were other linguistic difficulties. The harvest forms that we used labeled the birds in English. Worse yet, the illustrations on the bird survey forms weren’t in color, and this made some people nervous. What if they picked the wrong bird based on the confusing black and white illustrations? Could they be sent to jail? The RITs could identify each bird in the local language, but even that wasn’t foolproof. In another village a hundred miles away the same bird’s name might be pronounced differently. Through patience, and careful communication, trust began to grow. We knew we were successful at getting the information across if people offered us tea and something to eat. It became a joke that you could tell the most successful RITs by watching their waistlines.

And in the years since 1984 the RIT program has made a difference. We can see it in population increases in some of our trust goose species, we can see it in the simple fact that most locals now welcome us into their homes and schools, and rely on us to keep them informed and updated about current wildlife issues.

There is, still, work to be done. And the jobs of RITs will always be complicated by changes in Federal regulations, refuge personnel and cultural diversity. But we know that, whatever challenges the future might bring, as long as we stay focused, and remember to stay on village time, the RIT program will be successful, and we will be doing our part to make sure that our children, and their children, will inherit an Alaska as rich, or richer, in resources and tradition than the one our Elders handed down to us.

*Orville Lind, Ranger,
Alaska Peninsula/Becharof NWR*

*Bruce Woods, External Affairs,
Anchorage, Alaska*



Realty Role: Adding to the NWRS

On February 18, 1929, Congress passed the Migratory Bird Conservation Act and created the Migratory Bird Conservation Commission to consider and approve the purchase or rental of any area recommended by the Secretary for the conservation of migratory birds. Later on March 18, 1934, the Migratory Bird Hunting and Conservation Stamp Act, known as the “Duck Stamp Act,” passed. Receipts from the sale of “Duck Stamps” were later deposited in an account known as the Migratory Bird Conservation Fund.

With the Migratory Bird Conservation Commission in place and the funding made available in a receipt account, the Commission immediately went to work. It approved the acquisition of thousands of acres over the next three decades — more than 7,000 acres in the 1930s, more than 29,000 acres in the 1940’s, and more than 10,000 acres in the 1950’s — and is still actively approving land acquisition proposals. To date, almost 48,000 acres have been acquired using the Migratory Bird Conservation Fund.

The Commission is chaired by the Secretary of the Interior and its members include two Senators, two Representatives, the Secretary of Agriculture and the Administrator for the Environmental Protection Agency. The Chief of the Refuge System’s Division of Realty serves as Secretary to the Commission.

Prior to presenting a project to the Commission for approval, the Division of Realty conducts a real estate appraisal on the property to determine its market value. The appraisal is reviewed and, if acceptable, approved by the regional review appraiser who then forwards the appraised value to the realty specialist working the project. The realty specialist, in conjunction with the region’s realty chief, prepares an offer letter and a statement of just compensation that is sent to the landowner. If this value is acceptable to the landowner, the regional realty specialist draws up a purchase offer. Upon receipt of the landowner signed purchase agreement, a survey may be conducted if needed and the project is then presented to the Commission for their approval. With the Commission’s approval, the realty specialist presents a check or, in this computer age, submits an electronic funds transfer to the landowner. After closing on the property, the deed is recorded and a final title package is prepared and submitted to the Department of Justice, who must review all land acquisition transactions that bring lands into the ownership of the United States Government.

*Tamar Tolliver, Division of Realty,
Arlington, Virginia,*

*A. Eric Alvarez, Division of Realty,
Arlington, Virginia*

Safe Havens for Endangered Species

Widely regarded as the world’s most powerful wildlife conservation law, the Endangered Species Act gives the Service a responsibility that is breathtaking in scope: nothing less than restoring our nation’s imperiled animal and plant species to a secure status and conserving the ecosystems upon which all of them, and all of us, depend. The National Wildlife Refuge System is vital to the success of this effort.

Of the 983 animal and plant species in the U.S. that were listed as of June 1, 2002, 25 percent occur on National Wildlife Refuges.

Fifty-nine National Wildlife Refuges have been established primarily for the benefit of endangered and threatened species. In Nevada, the Service created the Ash Meadows NWR to protect a unique system of desert springs, associated wetlands, and alkaline desert uplands that harbor 24 species of animals and plants found nowhere else in the world. Central Florida’s Lake Wales Ridge, a patchwork of remnant sandy scrub habitats along a prehistoric shoreline, has one of the highest concentrations of endemic species in North America, including 22 listed plants and 4 animals. The Service is in the process of acquiring some of the best remaining sites to create a NWR for these vulnerable species. One of the latest refuges is Bayou Teche NWR in Louisiana. Located at the southern extreme of the biologically rich Atchafalaya River floodplain, this is the only refuge in the country specifically established to conserve the threatened Louisiana black bear. It also benefits migratory birds and a variety of other wildlife.

The task of conserving our nation’s imperiled animal and plant resources is too large for any single agency and program. It requires partnerships of private landowners, other interested individuals, independent organizations, and government. But the National Wildlife Refuge System is indispensable if future generations are to have the thrill of seeing such treasures as the California condor or the Ash Meadows sunray.

*Mike Bender, Division of Endangered Species,
Arlington, Virginia*



*Reelfoot NWR, Tennessee
Bald eagles
David Haggard/USFWS*

The Lasting Legacy of Three Fallen Firefighters: Origins of Professional Firefighting in the Refuge System



Marty Collins/USFWS

Working to control a stubborn wildfire on Merritt Island NWR in the 1970's, Beau Sauselein was operating a small dozer while Scott Maness rode with him watching for hazards.

One of the frequent afternoon thunder showers which appear suddenly along the coast came towards them. As the storm drew near the fire, the wind suddenly changed directions. What had been a slowly burning backfire turned into a raging head fire, burning directly towards them. Beau raised the plow and turned the dozer to try to save the equipment, but he could not return to the road on his entry route. As the fire overtook them, they abandoned the tractor and ran till they faced an impenetrable thicket of palmettos.

Both men were equipped with fire tents, a rolled up sack of reflective, fireproof material (similar to a sleeping bag) that was intended to provide a last ditch defense in emergencies like theirs. Scott carried his fire tent in his belt, but Beau left his on the tractor when he abandoned it. Both Scott and Beau tried to use the same tent, but it could not protect them adequately.

Even if both had their own tents, it is doubtful that they could have survived the severe heat of the fire. It was ironic that the heavy rain following the high winds put that area of the fire out shortly after it passed over the men. The palmetto thicket that had prevented their escape stood intact, a few yards away.

After the rain, the other people working the fire searched for Beau and Scott. Allen Flock followed the fire plow furrow, found where they had abandoned the bulldozer, and finally came to the small clearing where they had been trapped. Both men were still alive, but seriously burned. They were taken by helicopter to the special burn unit at Shand's Hospital in Gainesville, Florida. Scott died soon after he arrived. Beau did not live through the night.

The Merritt Island headquarters and visitor center, which was completed several years after Beau and Scott died, is named in their honor. A plaque at the entrance pays tribute to these men who gave their lives protecting the resources that they loved. Though they never lived to see it, these men — along with Richard Bolt whose self-sacrifice in an earlier wildfire at Okefenokee NWR is commemorated at the refuge's Suwanee Canal visitor's center — left a monumental legacy, one that will be remembered for generations to come.

Two days after this disaster, the fire was still raging out of control. Reinforcements for the firefighters were pouring in. Trained firefighters and fire equipment were pulled in from all over the country. A Federal interagency Overhead Team was to take over total responsibility for the fire. It was very welcome help, but I worried how we would pay for this service from a budget which couldn't even afford basic fire equipment.

In the days to come, I would learn that all of the considerable expenses of the firefighters would come from an emergency, interagency funding source that was not bound by budget limits. In the months to come, the FWS would become a part of this system, and refuge personnel from all over the country would be trained to take part in Overhead Team operations on refuges as well as other public lands.

Those three Refuge deaths over a period of two years became the catalyst which bought about drastic change. There have been no serious accidents since that time, and refuge personnel are dealing with more fires than ever. Our refuge firefighters, stationed throughout the country, are among the most experienced, best equipped, and most capable in the world. Wildlife habitats are also better protected and managed. That is the legacy left by Richard Bolt, Beau Sauselein, and Scott Maness.

John Oberheu, retiree

Part Boot Camp: Part Love-In



I have been privileged to work for the NWRs my entire career. In addition to being a tremendously rewarding work experience, my wife Catherine and I also found it to be a great way to raise a family. For twenty years we lived as well as worked on refuges around the country, before moving on to Regional and Washington office jobs, and although our four grown children have pursued other professions, I know they bring the things they experienced on refuges into their daily lives and jobs.

*Dave Heffernan
Denver, Colorado*

When the National Conservation Training Center opened in 1997, the Service gained a “twofer.”

The agency built an institutional “home” for itself, where the mission and history of the Service would be consolidated and displayed before its employees and the larger public.

And the National Wildlife Refuge System found a home for the Refuge Management Training Academy, a nearly 40-year tradition of the system that’s part “boot camp,” part “love-in” for aspiring refuge managers.

The need for formalized refuge management training for employees launching their refuge careers was recognized years ago, according to Jim Clark, NCTC’s chief of wildlife training and the refuge academy leader since 1994.

“The issues refuge managers face today are so complex that the importance of providing a challenging training experience for future leaders of the refuge system became very apparent,” says Clark.

In 1965, the first academy commenced at the Minnesota Highway Civil Defense Training Center in Arden Hills, Minnesota, where 62 students spent 5 weeks addressing issues ranging from search-and-rescue techniques to big game management to correspondence writing. Out of that “Class of ‘65” came future assistant and regional directors for the Fish and Wildlife Service and two refuge division chiefs.

They were instructed to wear uniforms when they had them, business suits “suitable for church attendance” when necessary, and not to spend more than \$10 in per diem.

“Though the dress code may be a little more relaxed, and weekends are now free, the Refuge Management Training Academy today continues to provide an opportunity for new refuge employees to learn new skills, to become informed of Service policies, and to develop a professional network with their peers,” says Clark.

Their outward appearance may have liberalized to include dread locks and T-shirts, and pick-up games of “Hacky-Sack” now substitute for social hour. But academy attendees find that their curriculum has evolved in four decades, too, changing the complexion and focus of academy dialogue.

Now, students tackle refuge compatibility and contaminants problems, and an assortment of issues beyond the refuge boundary sign, like media relations and community support. Their studies are supplemented by field trips to mid-Atlantic refuges like Chincoteague and Blackwater to examine topics first-hand.

“The academy received a major facelift in 1994,” says Clark. “Instead of a straight lecture approach, the academy was restructured to provide more interactive sessions, group discussions, and practical exercises. Many of the issues of 1965 still exist today, and as was the case then, today’s manager must be a ‘Jack or Jill of all trades ... and an expert at several.’ But the list is ever-growing and increasingly complex.”

The academy trimmed down to a 3-week program since 1965, and migrated three more times — from Minnesota to the National Mine Health and Safety Academy in Beckley, West Virginia; Dana College in Blair, Nebraska; and the College of Charleston in South Carolina.

At NCTC, it came home.

*David Klinger, Senior Writer-Editor,
Shepherdstown, West Virginia*

Sanctuary and Stewardship for Employees

Did You Know . . . ?

About 30 percent of the National Wildlife Refuge System is wetlands.

Merritt Island NWR in Florida has more endangered species than any other refuge.

The Upper Mississippi National Wildlife and Fish Refuge was the first to allow hunting.

Despite Alaska's weather, refuges in North Dakota, Montana and Minnesota may actually have the most severe winters because of the wind chill factor. A wind chill factor of 105 degrees below zero in Des Lac, Minnesota was recorded in January 1970.

Lower Klamath NWR was the first refuge established solely for waterfowl in 1908.

Think of it as an early anniversary gift, as the National Wildlife Refuge System approached its centennial mark.

In its first five years of existence, the National Conservation Training Center has proven its value to the managers of America's refuge system through its training, its products, and its availability as a "watering hole" for refuge employees.

Take, for example, the first conclave of refuge biologists, who met at NCTC in 2000. The 280 biologists who toil on refuge lands had never met one another, in collective fashion, until they gathered on the Shepherdstown campus to discuss science and compatibility issues affecting refuges.

NCTC, infused with the spirit of early biologists like Rachel Carson and Ira Gabrielson, provided contemporary biologists with the perfect venue for their first gathering.

There's now a refuge officer basic school at NCTC and a maintenance academy for wage-grade employees, recognizing how vital these skills are to the operation of the refuge system.

NCTC's education outreach division, in partnership with refuge office staff, staged the first visitor services workshop in 2001 to help public use, outreach, and environmental education employees prepare for the system's centennial observance, and to ground them in the "Big 6" refuge public activities.

Flip through the NCTC course catalogue and you'll see how deeply refuge-related course work permeates the training center's curriculum. Compatibility, cultural resources, air quality, and comprehensive conservation planning typify NCTC's course offerings, and underscore just how fundamentally the National Wildlife Refuge System has evolved from even the proximity of its 75th anniversary year.

"As the refuge system provides sanctuary and stewardship for species, I think you can make the case that NCTC is providing a large measure of both for the men and women who work on refuges," said NCTC Director Rick Lemon. "We're very mindful of the trust that the refuge system has placed in NCTC, to help deliver the tools that will carry refuges forward into their next century."

Centralized at NCTC, too, have been a number of educational programs that have capitalized on the availability of NCTC to take them to a higher level of effectiveness in reaching clients of the refuge system.

The refuge system and NCTC have partnered on two national "Wild Things" satellite broadcasts in 2002 and 2003 to connect students and refuges during the centennial commemoration. In 2002, students took a "refuge road show" across the nation, looking at projects by young people that have benefitted the refuge system. In 2003, the focus has been on a celebration of the 100th anniversary.

International Migratory Bird Day and "Shorebird Sister Schools" projects have used the media of television and Web technology to link students with refuges, using the vehicle of migratory songbirds and shorebirds as the connection. "Earth Stewards" continues to connect schools and local refuges with community partners and to turn refuges into outdoor classrooms and sites for habitat stewardship projects. NCTC personnel continue the Service's time-honored relationships with national Boy Scout and Girl Scout organizations, using refuges as the locale for workshops and recipients of conservation projects.

Not bad for starters, though it's a sure bet that the National Wildlife Refuge System will come up with a few more assignments for NCTC in its second hundred years.

*David Klinger, Senior Writer-Editor,
Shepherdstown, West Virginia*



How a Big, Foreign-Born Rat Came to Personify a Wildlife Refuge Battle with Aquatic Nuisance Species



Delta NWR
Nutria
John and Karen Hollingsworth/USFWS

In 1899, a handful of enthusiastic entrepreneurs, reasoning that they had discovered an attractive, easily-domesticated animal suitable for highly profitable fur-farming, eagerly imported the first nutria from South America to Elizabeth Lake, California.

The nutria, an aquatic, marsh-dwelling animal that can weigh up to 25 pounds, quickly displayed its twin, high-speed talents — eating and reproducing. With four large incisors, nutria are capable of cutting down plants while swimming underwater without fear of drowning. And they can breed any month of the year, with females breeding again within two days of giving birth to a litter.

But a budding market for nutria pelts eventually crashed and a lot of rodents penned in fur farms suddenly wound up in the wild. It is their descendants that now wreak havoc just about anywhere they happen to be, and that includes some of America's national wildlife refuges.

The nutria story neatly personifies much of the country's invasive species problem — a species initially believed beneficial was imported; when the economics didn't pan out, many of the animals were left to fend for themselves. In a place with a favorable climate and no predators, they have thrived. And they continue to be a headache.

Each year in the United States, harmful plants and animals that shouldn't be here damage or destroy more than three million acres of natural habitat, and they also carry grave threats to about 400 species already on the list of endangered or threatened species. Thousands of invasive species threatened birds and wildlife on refuges across the country.

Along the path of the Upper Mississippi National Wildlife and Fish Refuge, a blanket of invasive plants known as purple loosestrife is wiping out wetlands needed by 40 percent of the continental waterfowl population.

Even the very first National Wildlife Refuge, created on Pelican Island in 1903, is not immune from the threat: exotic plant species such as citrus trees and Australian pine are slowly driving out native plants while destroying productive wildlife habitat.

Dr. James Tate Jr., science advisor to Interior Secretary Gale Norton, told the Senate Committee on Energy and Natural Resources in June, 2002, that more than 6 million acres of the national refuge system are already infested with exotic plants and interfere with wildlife management on more than half of all 540 refuges.

"Refuge field managers have identified invasive species problems as one of the most serious threats affecting the refuge system," said Tate. "Nationwide, the rate of spread of invasive plants is estimated to be 5,400 acres per year." The refuge system has already identified more than 300 invasive species-related projects with an estimated cost of \$120 million — just to bring the problem under control.

Tate said nutria now exist in 22 states and across one million acres of land. Zebra mussels, giant salvinia, Chinese mitten crabs, round gobies, Norway rats, Asian carp, Asian swamp eels, feral goats and pigs represent one part of the problem. On the other side, Tate said, are salt cedar, leafy spurge, whitetop, exotic thistles, Brazilian pepper, Chinese tallow trees, climbing fern and melaleuca — the latter was initially so admired for sucking water out of swamps that melaleuca seeds were air-dropped over much of southern Florida.

"Of the more than 6,000 invasive species of plants and animals introduced to this country, only very few cause serious problems," said Dan Ashe, the outgoing Chief of the National Wildlife Refuge System. "But those few are responsible for a lot. It's a problem that needs to be addressed vigorously."

Nutria are one of the most visible invasives in the refuge system, but the overall threat from these invaders is now considered to outstrip all others. By 2001, refuge operations projects totaled nearly \$150 million — a 240 percent increase over the previous 21 months.

More than six million acres of the refuge system are infested with exotic plants; salt cedar, leafy spurge, Brazilian pepper, purple loosestrife and melaleuca are only a few



Purple loosestrife

examples. And nonindigenous animals such as tilapia, Norway rats, Asian carp and wild pigs pose significant problems.

A refuge system invasive species team is developing a national strategy for invasive species management, while the invasive species problem continues to gain significant bipartisan support in the Congress. And local and state governments as well as private citizens and non-government organizations are partnering with the refuge system to help battle invasives, system-wide.

*Ken Burton, Public Affairs,
Washington, D.C.*

Braving the Border



*Cabeza Prieta NWR, Arizona
Greg Knadle/USFWS*

In Texas the Santa Ana, Lower Rio Grande Valley, and Laguna Atascosa refuges share 81 miles of border with Mexico. In Arizona the Cabeza Prieta Refuge shares 56 miles, Buenos Aires Refuge — 12 miles, and San Bernardino — 6 miles. Due to increased Border Patrol attention to urban crossing areas, these remote and isolated federal lands have become major arteries for smuggling humans and controlled substances into the United States.

The most serious problem of this traffic is the safety of refuge staff and visitors. The Texas border refuges are a major domestic and international tourist destination for many winter visitors. Visitors at Santa Ana have been victims of robbery and threatened with physical harm. A nighttime tram trip for visitors to learn about wildlife at night had to be discontinued due to concern for visitor safety.

The hazard to the undocumented illegal aliens themselves was brought to national attention last year when 14 perished when they were abandoned on the Cabeza Prieta NWR by their “Coyote” (paid smuggler guide) miles from any water or assistance. Several illegal aliens have been victims of homicides while involved in illegal activities on the refuges.

Theft of refuge and visitor’s property is another problem. Government buildings and staff residences have been broken into. San Bernardino Refuge has been the victim of theft of a vehicle and all the tools in the refuge shop. All of the staff quarters at Buenos Aires Refuge have been broken into — some several times.

Habitat degradation has occurred with hundreds of new trails and roads created through wildlife habitat by the illegal traffic. The trails used by illegal traffic are littered with tons of trash and high concentrations of human waste are left behind. Thirty-seven abandoned vehicles had to be removed from Cabeza Prieta Refuge at considerable effort during the past year and a half. In a mass invasion through the boundary fence from Mexico, 60 vehicles entered Buenos Aires Refuge at one time! Most fires occurring on these refuges are the result of human activity, a high percentage of which are due to the use of warming and cooking fires by the illegal aliens. The concern over habitat destruction and the disturbance to wildlife is heightened by the fact that the habitat for the endangered ocelot and jaguarundi are protected by the Texas refuges. The endangered Sonoran antelope is found in the United States only on the Cabeza Prieta Refuge. The endangered ferruginous pygmy owl and the lesser long-nosed bat are found both on Cabeza Prieta and Buenos Aires Refuges. Wilderness is compromised at Cabeza Prieta not only by illegal traffic but further by law enforcement activity of the Border Patrol.

At the request of the House Committee on Appropriations, all Federal agencies involved with the border from California to Texas have been required to develop coordinated plans to mitigate and prevent environmental and other impacts caused by the undocumented illegal aliens crossing federal lands. Even if the illegal traffic were to be stopped today, a tremendous amount of habitat rehabilitation will be required on these refuges.

*Lawrence S. Smith,
SW Regional Representative for the National Wildlife Refuge Association*

Wildlife Knows No Borders



USFWS

The Service's Division of International Conservation recently brought Chinese wetland managers to visit Lower Suwannee, Okefenokee and Bond Swamp NWRs and meet with staff. Following disastrous floods in recent years, China is now recognizing the many benefits of wetlands, including for flood control, water quality, and as wildlife habitat.

International Conservation has been busy working with the National Wildlife Refuge System on behalf of wildlife around the world. The division actively coordinates exchanges between refuge and foreign personnel, helps conserve imperiled species abroad and links the National Wildlife Refuge System to the Ramsar Convention on Wetlands.

"These exchanges are a valuable tool for trading information, and not so much a way to demonstrate the right way to manage landscapes," said Ken Stansell, Assistant Director for International Affairs. "We do not necessarily have all the right answers. What we have evolved as a refuge system here is based on where we are economically and with issues such as private property rights. We are looking at different scenarios abroad."

Foreign visitors have learned many things through these exchanges. According to Stansell, most of the developing world is not oriented to educating the public and making them partners in conserving protected areas. They have learned from our refuge system that it is not just about doing biology on the refuge: partners, volunteers, community groups are critical for successful conservation projects.

Along with the exchanges, the division administers grant programs to help on-the-ground conservation efforts overseas. These grant programs have helped with conservation programs for species such as rhinos and tigers in South East Asia and elephants in Africa. Some grant funds go to wildlife reserves, international wildlife refuges.

"A \$5,000 grant award to a Russian Zapovedniks (wildlife reserve) is minuscule when compared to our refuges' budget," said Dr. Herb Raffaele, Chief of the Division of International Conservation. "With the changes in Russia, the Zapovedniks's staffs have taken a 30 percent cut and they do not have money to put gas in the vehicles. These small grants are instrumental in funding just very basic types of activities there."



USFWS

Last year, Quivira NWR became the 18th Ramsar site in the United States. There are a few other sites being considered for listing. The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for international cooperation for the conservation of wetlands. There are about 1,230 wetland sites designated in the Ramsar List of Wetlands of International Importance.

During the Ramsar dedication at Quivira NWR, the division hosted an Argentinian who works on wetland conservation issues on the other end of the migratory bird flyway. Thus, the Service was able to engage in a dialogue about management of the same birds that occur there as well as here. A number of NWRs are Ramsar sites; there are a few private land programs in the United States that are Ramsar sites. The designation of sites is just one small part of what makes up Ramsar.

"The United States is working in many ways, especially to help other countries bolster their management of wetlands so that species we are spending a lot of resources on here, will in fact have wetlands in other countries where they can survive as well," said Raffaele.

"If you look at the resources the refuge system manages, a lot of times you see that they are international resources," said Raffaele. "Since many of refuges' trust species are leaving and going to another country, then our refuges are in fact international bodies. We need to work all over the globe for trust species that are having bigger problems in other places. The challenge for refuges is to take the biology of species and apply it to land management. When we think about the species, we have to think beyond the land we manage and look to land that lies outside of the United States. This is, and will be, a challenge for the Service."

*Nicholas Throckmorton, Public Affairs,
Washington, D.C.*

Partners



*Lake Ouachita NWR, Louisiana
Hollingsworth/USFWS*



*John Heinz NWR, Pennsylvania
Phyllis Cooper/USFWS*



*Tule Lake NWR, California
Dave Menke/USFWS*



*Shiawassee NWR, Michigan
Blue winged teal, Hollingsworth/USFWS*

The National Refuge System Centennial Commission: Polishing Pieces of Natural Treasure for the American People



My Grandfather was U.S. Army, my Dad was U.S. Air Force, my brother is U.S. Navy, and I am U.S. Fish and Wildlife Service. I feel like I too have been able to service. Not many can say, "Not only do I love my job, but people will love what I helped do forever."

*Barbara D. West, Division of Realty,
Atlanta, Georgia*

The United States is the only country with a system of lands set aside exclusively for wildlife. The National Wildlife Refuge System, administered by the Service, sweeps across a total of 95 million acres in every state, island possession and territory, and comprises pieces of a network of a natural treasure.

All of us serving on the commission created to observe the refuge system's centennial feel a special honor to be a part of this special, year-long birthday party. The spirit of Theodore Roosevelt must be watching, his toothy grin saying it all.

Our ability to celebrate this great system is a testament to the thousands of people — in federal and state governments and committed citizens — dedicated to wildlife conservation. Starting with Teddy Roosevelt's friends and partners, his fellow anglers and hunters who founded the American conservation movement, citizens and governments came together for the benefit of wildlife.

Dedicated wildlife professionals have also made this centennial possible. From the system's beginnings in 1903 — when it was more of a patchwork than a system — to the present day, men and women labored long and hard for something they loved. Refuge system lands have been actively and carefully managed to sustain and restore wildlife and wildlife habitat. Professional management has created a legacy to be passed to future generations.

These were people who, in the words of former Service Director Lynn Greenwalt, were committed to "save the dirt." They were not in it for the money; their jobs for decades were distinguished by low pay and meager benefits. These were people fueled by their passion. We owe them a huge debt.

Finally, we need to acknowledge the very special contribution of volunteers, Americans who work on our refuges throughout the United States without asking for a penny for their time or their labor. The level of volunteerism we see in our country has no equal anywhere else, and the volunteerism we see on refuges has no equal anywhere else in our country.

These unique lands are for our citizens to enjoy. The law makes wildlife dependent recreation including fishing, hunting, wildlife watching, and environmental education the priority public uses of the system. Citizens are able to go onto these lands and witness or interact with nature and wildlife. Refuges are not "biospheres under glass" but are there to teach and let us touch daily our Nation's rich conservation heritage.

The job for our commission is to present these well-tended and polished pieces of natural treasures to the American people, and to point with pride at what we have: a 100-year-old network of special places that says, this is what we were, and this is what we are.

And it belongs to all of us.

*William Horn, Chairman,
National Wildlife Refuge System Centennial Commission*

Ducks Unlimited and Refuges Share Common Goals



*Crab Orchard NWR, Illinois
Glen Smart/USFWS*

Ducks Unlimited is proud to be a partner in the refuge system. We have close to 600 projects on our nation's refuges, amounting to 300,000 acres of wetlands and associated uplands. Dispersed throughout the four flyways traveled by migratory birds in the United States, our nation's refuges present a valued opportunity to restore and enhance critical habitats.

When waterfowl come in for a landing after a long migratory flight — which can last up to 2,000 miles, non-stop — they require a safe place to stop, rest and refuel. The wetlands on our nation's refuges help meet these needs. In addition to waterfowl, wetlands support more than 900 species of wildlife. And, because there is such a wonderful cross-section of wildlife thriving in wetland ecosystems, there are unparalleled recreational and conservation opportunities for people. Wetlands are amazing places—more productive per square foot than any other ecosystem; however, they are constantly under siege because of human actions and natural occurrences. We estimate current wetland losses to be above 100,000 acres every year.

The founders of Ducks Unlimited were driven to action during the Dust Bowl days of the 1930's. As dedicated waterfowl hunters, they witnessed the impact of drought on waterfowl populations and vowed to safeguard strategically important wetlands and restore those that have been lost. For 67 years, we have built on the expertise of these early wetland pioneers. Whether a wetland is located in the prairies of North Dakota or within San Francisco's city limits or New Jersey's Meadowlands, DU's wetland biologists and engineers have at their disposal time tested techniques and the best science available.

It is our privilege to support our nation's refuges on behalf of waterfowl and many hundreds of other species of wildlife and all their human admirers who seek refuge in the natural world.

D.A. (Don) Young, executive vice president, Ducks Unlimited

The Unusual Origins of Ducks Unlimited

Before it became a refuge in 1960, North Carolina's Mackay Island had several notable owners; the most influential owner was Joseph P. Knapp, a wealthy New York printing magnate and philanthropist who is considered the father of Ducks Unlimited.

Knapp purchased Mackay Island in 1918 and saw great potential for this area. He built a resort and experimented with various wildlife management techniques, some of which are still in use today. He was so taken by the concept of wildlife management that in 1930 he formed an organization called "More Game Birds in America Foundation."



Along with J.N. "Ding" Darling, J. Pierpont Morgan, Arthur W. Bartley, Ogden M. Reid and John Huntington, Knapp was among the foundation's first directors. Out of the "More Game Birds in America Foundation" was born Ducks Unlimited, a close partner of the Service in restoring thousands of acres of wetland habitat on refuges.

*Suzanne C. Baird, Mackay Island NWR,
Knotts Island, North Carolina*

*Horicon NWR, Michigan
Ryan Hagerty/USFWS*

Audubon and America's Wildlife Refuges: A Century of Partnership



*Squaw Creek NWR, Missouri
Jim Rathert/Missouri Conservation*



*Cedar Island NWR, North Carolina
Hollingsworth/USFWS*

Our National Wildlife Refuge System was born in a proud tradition of partnership. At the urging of early Audubon societies, Teddy Roosevelt, in one of America's great acts on behalf of bird conservation, established Pelican Island in Florida as the first Federal bird reservation. Partners from the beginning, Audubon and the Federal government jointly financed the work of Paul Kroegel, an Audubon warden, who guarded the birds of Pelican Island from slaughter by plume hunters.

Beginning with this historic act to provide sanctuary to the birds of a small island in Florida, the Refuge System emerged at the forefront of bird conservation. Roosevelt went on to set aside 50 other refuges specifically for the preservation of America's birds. The fledgling Refuge System protected colonial nesting birds in Louisiana and Florida, Pacific Coast sea birds in Washington and California, and waterfowl in California and Oregon. As Roosevelt wrote in his autobiography in 1913, "The establishment by Executive Order of fifty-one National bird reservations distributed in seventeen States and Territories at once placed the United States in the front rank in the world work of bird protection."

The Refuge System now protects more than 700 species of birds, from the majestic Bald Eagle soaring above the refuges of the Klamath Basin, to the breathtaking golden Prothonotary Warbler perched in the floodplain forests of the Upper Mississippi National Wildlife and Fish Refuge, to the peaceful Piping plover nesting on the sandy beaches of Lower Rio Grande Valley NWR in Texas.

Although Audubon wardens no longer patrol our nation's wildlife refuges, National Audubon Society remains committed to guarding America's native birds and wildlife. The plume hunters of yesteryear have been replaced by the modern threats of urban sprawl, water pollution, and invasive species. To protect the NWRS from these threats, Audubon now uses a combination of public policy advocacy, citizen science, community outreach, and volunteer partnerships.

Nowhere is partnership more evident than in the Cooperative Alliance for Refuge Enhancement (CARE), a coalition of more than 20 member organizations from across the political spectrum dedicated to the improvement of our National Wildlife Refuge System. Audubon, as a member of CARE, works closely with the Fish and Wildlife Service in making steady progress toward dedicating the resources necessary to operate and maintain a fully functioning system of lands for wildlife conservation. Working together, Audubon hopes to keep wildlife refuges in the front rank in the world work of bird protection.

Mike Daulton, Assistant Director of Government Relations, National Audubon Society, Washington, D.C.



*Bear River Migratory Bird Refuge, Utah
USFWS*

A Little CARE Goes a Long Way



*Bosque del Apache NWR, New Mexico
Hollingsworth/USFWS*

The American Sportfishing Association is a longstanding partner with the Service. Most people in the agency know us because of our support for the fisheries program. But we're also proud to be a part of the Cooperative Alliance for Refuge Enhancement.

It's remarkable that CARE has persevered and we can now begin to see the pay-off for making the National Wildlife Refuge System's centennial a call-to-action for strong investments in conservation and recreation. Beyond 2003, the CARE partnership can be a model for future rallying among the conservation community, helping us all do more to protect the outdoors for its future enjoyment.

The American Sportfishing Association promotes sportfishing interests on all public lands and waterways, and the hundreds of wildlife refuges that offer special fishing opportunities for millions of Americans are not unknown to our membership. The solitude and splendor of these thriving habitats give them a special place among the Federal family of public lands. By safeguarding some of our best rivers and waterways, wildlife refuges are incredibly valuable to fisheries conservation overall.

The Fish and Wildlife Service and its partners have been building toward the National Wildlife Refuge System's 100th anniversary for a long time, and the sportfishing community looks forward to being a part of the next chapter for wildlife refuges, too. The new visibility, partnerships, and investments these centennial efforts are bringing are setting the stage for our future progress together.

*Mike Nussman, President and CEO, American Sportfishing Association
Alexandria, Virginia*

Finding Solace with the Wood Drake



Scott Schliebe/USFWS

Wendell Berry once wrote, "When despair for the world grows in me and I wake in the night at the least sound in fear of what my life and my children's lives may be, I go and lie down where the wood drake rests in his beauty on the water; and the great heron feeds."

For the 35 million Americans who visit each year, the National Wildlife Refuge System is a place to find solace with the wood duck and the heron, and many other species. And in these times, Americans need places of refuge.

Indeed the National Wildlife Refuge System is important to people. But more fundamentally, refuges provide some of the last and most important strongholds of wildlife habitat in this country. Almost 100 years ago, President Teddy Roosevelt established the first refuge to protect birds against market hunting, the number one threat to wildlife at the time. Today, the biggest threat facing wildlife is habitat loss, and the Refuge System has grown to encompass Arctic tundra and tropical islands, to house the 1,000-pound polar bear and the 1-ounce shrew, and to provide stepping stones for millions of migratory birds.

Maintaining the biodiversity of the northern Everglades or the Alaskan wilderness or the Sonoran Desert requires the dedication and expertise of all the staff of the Refuge System. From Paul Kroegel on down the line, that dedication is the one resource the Refuge System has never lacked. Even though refuge staff have gotten pretty handy with duct tape, maintaining the biodiversity of the Refuge System also requires adequate funding, and that's why Defenders has been an active member of CARE since its inception.

Defending our nation's wildlife has always included defending the National Wildlife Refuge System — and Defenders of Wildlife will continue its support of the Refuge System for the next 100 years.

*Rodger Schlickeisen, President, Defenders of Wildlife,
Washington, D.C.*

Working Together for Habitat Management



Innoko NWR, Alaska
USFWS

The Wildlife Management Institute (WMI) was established eight years after Pelican Island was designated as the first National Wildlife Refuge. As a result, both the Refuge Systems' and WMI's histories have intertwined during the last century. WMI has been a firm supporter of the Refuge System since its inception.

Refuges are often islands of specialized habitats within larger, altered environments. Ideally, these habitats fulfill critical needs that complement the adjacent land's uses. Of special interest to WMI are both the premise and promise of these lands, founded on the idea of active management of wildlife and its habitats. This is not a new idea, but one that many within the wildlife profession and the general public have forgotten. Each species has its own requirements, and often those requirements are the result of traumatic events in the environment. Wildlife managers have learned that they can, and often must, simulate these events to achieve the desired habitat conditions a species needs. It is critical that a combination of active and passive management techniques be applied, so habitats are restored and maintained.

Active management to restore and maintain habitats has been an integral part of the success of the Refuge System. Implementing and explaining these practices could be the Refuge System's greatest contribution to the future of wildlife conservation. The Refuge System must function as a living classroom, where experiments in management are conducted and where the public is invited to see how the pieces fit together. Refuges should be places where hunters, anglers, birders and others can come together to understand that we live in a dynamic world where humans can take a positive role to achieve wildlife conservation.

WMI understands the Refuge System needs adequate funds and a diverse coalition of supporters who understand the varied needs of wildlife and share a common vision, as well as a willingness to invest in the future. It was with this notion in mind that WMI became a founding member of the Cooperative Alliance for Refuge Enhancement (CARE). The success of CARE, like that of the Refuge System itself, has been truly remarkable. However, neither CARE nor the Refuge System can rest on its laurels. New challenges and opportunities await.

The Refuge System's role in the unparalleled success of wildlife conservation in North America is undeniable. As the system grew, its role became more complex and more important. It is truly an unsung treasure of our national lands. The lands of the Refuge System are special places maintained by special people, dedicated to the perpetuation of America's wildlife. All Americans are richer as a result.

Robert L. Byrne, Wildlife Program Coordinator, Wildlife Management Institute, Washington, D.C.

The Refuges: Portals to Birding



Rice Lake NWR, Minnesota
Dr. Paul Green/ABA

As we all know, the National Wildlife Refuge System welcomes almost 40 million visitors a year. Most of these people are there to watch wildlife, and in most reserves birds are the most visible and cooperative of wildlife to watch. As a result, the refuges act as important portals to birding and, for many, birding is their gateway to a relationship with the natural world. The system serves as an effective way to introduce the many visitors to birds, the needs of birds, and the urgent need to conserve the habitats on which the birds depend. While important for birds, the refuges are also very special to many birders.

Consequently, the American Birding Association, the largest nationwide organization dedicated solely to birds and recreational birding, has become more engaged in monitoring the health and well-being of the refuge system. ABA is involved because we know that the refuges — and birds — cannot wait.

With 19 other core groups, we are engaged in CARE (Cooperative Alliance for Refuge Enhancement) and our focus is on securing more funds from Congress for the refuge system. It is clear to us that, without adequate resources, creative conservation management for multiple species is an impossible task.

The American Birding Association is involved with the refuge system in other ways also. Our Opportunities for Birders volunteer directory brings together skilled volunteers and projects that need their help. Many of these projects are on national wildlife refuges, and we encourage you to submit your projects this fall for the 2004

directory by visiting <<http://americanbirding.org/opps/voldiindex.htm>>. Last year, ABA cooperated in the first-ever joint USFWS/National Wildlife Refuge Association “Friends” conference in Washington, D.C., and we also promote and participate in International Migratory Bird Day activities. The theme for 2003 will include the celebration of the refuge centennial.

These activities present members of the American Birding Association, and the birding community in general, with splendid opportunities to interact with the refuge system, and their dedicated staff, through the Centennial year and beyond. Our relationship with the Refuge System gives the American Birding Association an opportunity to bring a birders’ agenda to the fore. We hope that refuges can facilitate access and accommodation for birders, and also engage in more creative management of habitat for birds.

*Paul Green, Executive Director, American Birding Association
Colorado Springs, Colorado*

Preserving Roosevelt’s Legacy

The National Rifle Association joins with its fellow participants in the Cooperative Alliance for Refuge Enhancement (CARE) in celebrating the 100th anniversary of the founding of our National Wildlife Refuge System.

This centennial year gives us the opportunity to reflect on how incredibly fortunate we are that the concept of wildlife conservation was conceived and born in the United States. One cannot imagine what would have happened if such enlightened thinking had emerged any later. The close of the 19th century was witness to the decimation of species whose populations were thought to be inexhaustible, and the opening of the 20th century did not portend a better future.

The founding father of our Refuge System, President Theodore Roosevelt, was a member of the National Rifle Association, and we are proud that one of our country’s most heralded conservationists was a sportsman in the truest sense of the word. He had the vision to see that our wildlife resources were not infinite and that it was going to take dedication, commitment and visionary programs to protect, preserve and enhance wildlife and wildlands.

The Refuge System is a treasure to NRA’s members who hunt, fish and simply enjoy wildlife. We are pleased to a part of the long-term effort to secure the financial foundation that the System needs in order to care for the wildlife it is entrusted with and to care for the people who come to re-create and re-new their spirits in the beauty that Nature provides.

Roosevelt led the way and it is now up to us, a century later, to be worthy of his legacy by doing our part to make the National Wildlife Refuge System the most diverse and best managed system of wildlife habitats in the world.

*Susan R. Lamson, National Rifle Association,
Director of Conservation, Wildlife, and Natural Resources,
Fairfax, Virginia*



*Ace Basin NWR, South Carolina, Disabled hunter blinds
© L.M. Ettline/NRA*

From Sea to Shining Sea



*Hakalau NWR, Hawaii
Jack Jeffrey/The Conservation Fund*

*Kodiak NWR, Alaska
Brad Meiklejohn/The Conservation Fund*

From the Maine coast to the Aleutian Islands, gifts from the Richard King Mellon Foundation to the Service span the nation. Since its American Land Conservation Program began in 1988, the Foundation's gifts of more than 530,000 acres have benefited 17 refuges. Their most recent gift at Alaska Peninsula National Wildlife Refuge marked the program's one millionth acre.

According to Patrick F. Noonan, chairman of The Conservation Fund, which works with the Foundation on the program. "Since their first gift at Blackwater NWR, the Foundation's focus has been on wildlife habitat — especially wetlands. More than half of all their gifts have directly benefited national wildlife refuges."

Nowhere was the need greater than in North Carolina where 100,000 acres of pocosin and peat wetlands owned by bankrupt First Colony Farms were on the market. The land, adjacent to Alligator River NWR and Mattamuskeet NWR, would double habitat for the reintroduced red wolf and become an eco-tourism destination and economic engine for the entire region.

Foreign investors saw it differently. They eyed the peat as fuel for a string of power plants planned for the property. After months of negotiations, the pending sale finally came before a bankruptcy judge in New York. In a tense, exciting session, the Mellon Foundation, working through The Conservation Fund's representative at the hearing, outbid the overseas consortium. The land became the Pocosin Lakes NWR.

Established in 1947, the Richard King Mellon Foundation, based in Pittsburgh, Pennsylvania, has had a long-standing commitment to conservation. Since 1977 the Foundation has made major grants and gifts for conservation in the areas of land acquisition, wetlands protection, and wildlife habitat preservation.

The American Land Conservation Program marked a new approach for the Foundation. The trustees decided to manage the program internally, knowing that the Foundation's historically lean administrative costs would maximize the program's charitable giving. Since the start, The Conservation Fund has advised and assisted on identification, purchase and stewardship for the program.

Explaining the Foundation's interest in America's system of wildlife refuges, Seward Prosser Mellon, president of the Richard King Mellon Foundation, said, "The American Land Conservation Program reflects our Foundation's — and family's — traditional and continuing interest in land conservation. We feel the private sector has an opportunity and an obligation to augment the conservation work of State and Federal agencies."

The Richard King Mellon Foundation's program has protected wetlands and wildlife habitat at refuges all across America. Theirs are gifts to all Americans that stretch from "sea to shining sea."

*Jack Lynn, Senior Associate, The Conservation Fund,
Arlington, Virginia*



People



Dick Uptegraft and daughter Cindy in 1959
Cynthia Barry



Molly Brown
Friends of Back Bay NWR/Virginia



Edwin B. Forsythe NWR, New Jersey
Kathy Clark, NJ State Wildlife Biologist and Ed Jones banding a peregrine falcon
Tracy Casselman/USFWS

Growing Up on a Refuge

Reprinted from the Refuge's 75th
Edition of *Fish and Wildlife News*

My father came to refuge life almost by accident. He had been the managing editor of a major newspaper in Nevada, and was asked in the late 1920's to write some articles on the dwindling antelope herds. He became so enthralled with what he found and what he saw in the wildlife business in northwest Nevada that he never returned to the newspaper.

I grew up with the Wildlife Refuge System. I never lived anywhere else until I went off to college.

I was brought back as an infant to the Charles Sheldon Refuge in northwestern Nevada where my father was stationed. My parents had lived for several years in this remote part of the country in an old, very primitive cabin which they referred to as the "Last Chance Ranch." It was an old stone ranch stead that came with the land and was without any of the amenities. My mother and father and I lived in this strange little building, out in the wilds, where we spent some extremely trying times, especially for my mother.

She was not particularly prepared for this primitive lifestyle, and her mother was even less pleased at the idea of her being there. She was from an academic family, had a masters degree in psychology and chemistry from Stanford University, and was an accomplished violinist and a vocalist in the classical sense. However, she had taught school for a time in one of the mining camps in southern Nevada, and so had been exposed to another side of the world. She knew, generally, what she was getting into and rather enjoyed it.

But she was hardly ready for a situation in which the advent of winter, for example, required that we be prepared to live utterly on our own, and alone, for four or five months without the probability of being able to get out. She was not apprehensive, however, and did as much as my father in making it possible to succeed in that environment. She helped him build the first roads on the refuge and taught him to work the gearshift on the refuge vehicle.

My earliest recollections are of living in this little two-room house — and of "accumulating" animals. I can remember vividly at one time having two or three antelope kids that we had rescued, two or three "bummer" lambs that had lost their mothers, a cow and a horse, and a collie dog that collectively followed everybody around in a little parade. They were always underfoot, all of them. They all didn't come into the house, but they wanted to. And wherever I went, it was with this entourage, which was very handy for my mother because she could find me by simply following the animal trail.

As I neared school age, we moved to Oklahoma. My father became the assistant manager at Wichita Mountains Refuge, which was established in 1905 as a forest preserve. Wichita Mountains was something of a cultural shock to me because there

*Sheldon NWR and Hart Mountain National
Antelope Range, Nevada
USFWS*



were a great many people living on this refuge. There were perhaps seven or eight families in residence, plus three CCC camps.

Two things impressed me immediately at Wichita Mountains. One was that it was extremely warm and humid when we moved there in June 1936. The discomfort we felt must have been severe to stand out in my memory all these years. The other thing that impressed me as much as anything was that there were children there. Playmates! We had the largest backyard on record and the opportunity to climb mountains and explore all manner of places.

One of the playmates, who became a fast friend although he was three or four years older, is still an employee of the refuge. And if I'm not mistaken, within the next few years he will be eligible for retirement, which tells you something about the passage of time.

It was at Wichita Mountains that I first went to school, and that was not any greater shock to me, I suppose that to any six-year-old going by bus to a school that seemed light years away from home. I can remember that the school bus had a wooden body with curtains — instead of glass — that rolled down the side windows. Years later I was to drive the school bus over 30 miles of unpaved, treacherous roads, a trip that took about three hours each day.

Our assigned house had ample space and was very comfortable. The houses then were widely spaced, similar to a compound, with lots of trees and the yards were large and well-maintained. It was almost like an estate — not opulent — but set up very much like an estate.

I can remember that the kitchen was equipped with a wood range, which was not unusual in those times. My mother was used to it, but it was shortly thereafter upgraded to a Coleman gasoline stove — a big one, a huge thing that required a tremendous amount of pumping to build up the pressure in the gas tank. One of my chores was to pump that thing before — and sometimes during — the preparation of each meal. It took a lot of attention and tender loving care. If I wasn't really careful, it would make strange noises and pop, which made my mother very apprehensive.

My mother liked Wichita Mountains very much. She accommodated herself to the new environment and became actively involved in teaching in the formal training program for the CCC people. They used to bring people who were interested in her courses — English and other things — together in one place. Every Wednesday night they had movies. And so it was we enjoyed a kind of social and community life that I suspect is not duplicated now on refuges anywhere because there were perhaps a thousand people in residence on the refuge, counting the CCC enrollment. That's a small town. The population on the refuge at that time was far larger than the town where I went to school, which even when I graduated from high school had a population of only about 600 or 700 people. We were a community.

World War II came and all that changed. My father was almost immediately assigned dual responsibility for Wichita and the Salt Plains Refuge, about 200 miles to the north at Cherokee, Oklahoma. The CCC camps were taken out and the staff on the refuge was sharply diminished. For most of the war years, there were no more than three families in residence.

Change also came from the enlargement of the nearby military reservation, Ft. Sill, the artillery training center for the United States. By agreement with the Service, the military used the refuge as a training area, and we soon had 2,000 to 3,000 troops conducting maneuvers on Wichita. This became quite a problem and created a new environment for all of us. Because the staff had been so curtailed, I was recruited to help my father do various kinds of things, not the least of which was fighting the grass fires the military caused.

One of the things I remember well was the soldiers who would come by my home just to talk to somebody not military. My mother would provide coffee and so on, and occasionally one of them would develop the courage to ask if he might take a bath. My mother was acutely conscious that these young men were heading into war and might not return. She was a surrogate parent for many of these soldiers.



My first day at Salt Plains NWR I was alone exploring the selenite crystal digging area. It was sunny and calm. I was checking out the area because I would be doing two years of nest monitoring of endangered interior least terns and threatened western snowy plovers at the refuge. Out of the blue, the sun disappeared, the sky darkened, and with nowhere to hide, a huge wall-cloud formed and it turned out that a tornado passed within six miles of the refuge — although it appeared at the time that it was coming right at me. It was quite a “first” experience on a NWR.

*Bryan Winton,
Lacassine NWR*

My childhood spent on refuges, particularly the early years on remote Charles Sheldon, stood me in good stead in later years when my career took me to Fish Springs in western Utah. One of the most desolate areas in the United States, Fish Springs was nevertheless one of the most exhilarating experiences in my lifetime. The Service had just acquired the land in western Utah when I was assigned there as manager in 1959.

Given this assignment, I was extremely fortunate in having a wife who had also grown up on a refuge and was undaunted by this awesome challenge.

Like my parents years ago, we were totally isolated, with no electricity, no telephone, no paved roads within 70 miles, and the nearest grocery store 76 miles distant. It was a long ways from anywhere and I've never lived in a more delightful place in my life.

There was very little social life at Fish Springs and nothing to do except what we did together. As we had at Salt Plains and Bosque del Apache, we would get in the pickup and "drive around the dikes" in the evening. We also explored the desert, which had first been used intensively and then abandoned by the miners after World War I. We started collecting what's called desert glass which, when it's sufficiently old, changes color and turns purple in the sunlight. This hobby earned us a reputation in the community as "those screwballs who spend their weekends digging in trash heaps." We'd dig for bottles in any old garbage dump but abandoned mining camp dumps were special finds. Before long, all the people in that end of Juab County were "digging in the dumps."

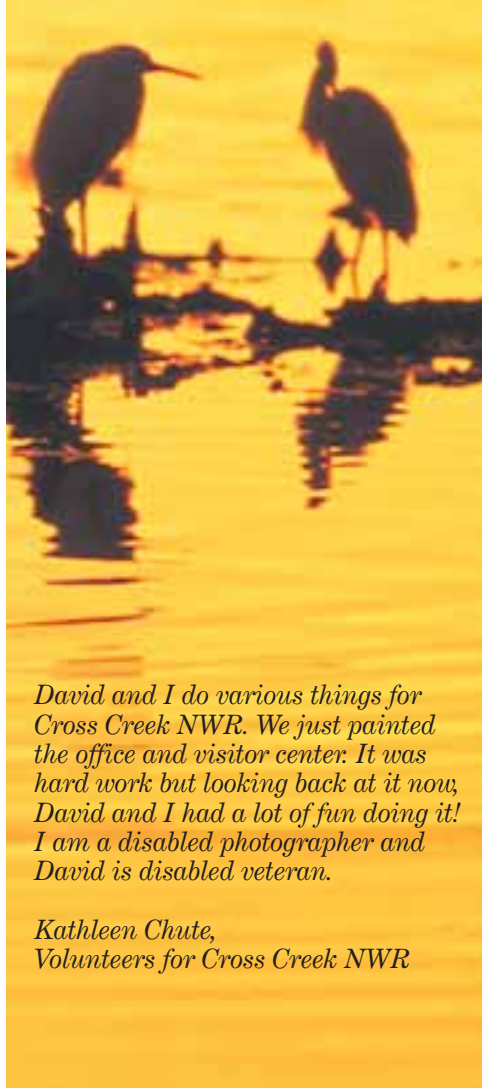
Although we were isolated, we never felt apprehensive. The people on the military base 70 miles away took an interest in us and were concerned about our welfare. I talked to them everyday on my two-way radio and if I missed for some reason, there would be a helicopter over the refuge in about 20 minutes.

I understand that families are no longer assigned to Fish Springs because of its remoteness. Not every young married couple would elect that kind of lifestyle, but to us it was an entrancing way of life. Perhaps the Service will come full circle again in Alaska, with base camps in the summer so the "pioneering" families can get personally involved in establishing refuges in remote areas like my parents did.

My memories of growing up on a refuge are vivid. It was an unparalleled opportunity, akin to pioneering and knowing you were strictly on your own in desolate areas for months at a time. It was an arduous life in many ways, but not burdensome, because it was enjoyable. The rewards were many, but chief among them was the sense of public service and the knowledge that you were doing what few others would willingly undertake.

Wichita Mountains and Fish Springs still have a hold on me. If I have any sense of deprivation, it is that I can't go back again to recapture the joy and sheer pleasure of living on a refuge.

Lynn A. Greenwalt, former director and refuge manager



David and I do various things for Cross Creek NWR. We just painted the office and visitor center. It was hard work but looking back at it now, David and I had a lot of fun doing it! I am a disabled photographer and David is disabled veteran.

*Kathleen Chute,
Volunteers for Cross Creek NWR*

Growing Up on a Refuge Proves "Endlessly Interesting"

When I tell people where and how I grew up, on wildlife refuges, they are so envious. I guess I didn't really see how neat it was until I was an adult, but I can tell you now, that I wouldn't trade it for the world.

Growing up with a biologist was endlessly interesting. So much so that we took the uncommon for granted. The first time my husband went to the freezer in my parents' home under instructions from my mother, he came back into the kitchen pale, having completely forgotten what she had sent him after. All that he could say was, "There is a zip lock baggie full of mice in there... and three or four dead bats!" To which my mother calmly answered, "Yeah, the ice cream is behind them Bob, just push them to the side."

Growing up I never learned to be afraid of the right things. I baited my own fishhook, cleaned my own fish and caught various amphibians and reptiles with regularity. Girls thought I was crazy and the boys got mad because I made them look bad.

Of course there were a couple of drawbacks. Dad had law enforcement responsibilities, and I remember all too well when he gave a certain young man a ticket, so much for that relationship! Then there was the time I decided that I needed to go duck hunting with him. Now, never really being much of a hunter, I am not sure to this day why I was there, but there I was. Dad set me up and two mallards were coming in. We waited, Dad said, "Shoot!" I still waited.... "SHOOT!!" He said, a little louder this time. I waited... "SHOOT!! God !#\$\$!" They lived to fly again another day, and thus ended my hunting career! From then on I just walked along.

Then there was the time he decided he wanted me to photograph baby great horned owls in the nest. The nest was in a cottonwood tree and the wind was blowing 40 mph and I am afraid of heights. What he wound up with was a 16-year-old wrapped around the madly swaying tree trunk, being circled by a shrieking, irate Momma owl while the babies nastily clicked their beaks. He was eventually able to talk me out of the tree, but he had to climb up himself and take the photos. They turned out pretty well.

I learned to love the environment and all that inhabit it from my father... I went to sleep with the croaking of bullfrogs and woke to the sounds of sandhill cranes. What I learned from him I strive to pass on to my own children, and am saddened when I realize that they will never have the opportunities I had growing up — they would find a bat in the freezer strange.

I love you Dad,
Julie

Retired refuge manager Clark Bloom shared a letter written by his daughter, Julie. Bloom lived on Modoc NWR for 18 years during his career. His children had the experience of growing up on a refuge. When he retired in 2000, his daughter lived too far away and could not attend his retirement dinner. Instead she wrote a letter about what it was like to have a dad who was in refuges and what it was like to grow up on a refuge.

Childhood On Refuges Led To Urban Service Career

I wasn't born on a refuge.....but it feels like it.

My life with the National Wildlife Refuge System began in 1959 when my father, Darrell "Dick" Uptegraft, took a job at Morton National Wildlife Refuge. Back then, the "Hamptons" were inhabited mostly by farmers and a few wealthy summer residents, including Elizabeth Morton, who donated the first lands for the refuge.

In 1961, we headed for the newly-established Erie NWR in rural northwestern Pennsylvania, where my father was the first manager. Decades later, my father told me why a man lived with us for a summer. In that rural area, our house was the only place available for a minority college student who was an intern at the refuge.

We moved to Tamarac NWR in northwestern Minnesota in 1965, where my father worked at the new Job Corps Conservation Center, arranging work assignments on the refuge for the corpsmen. We lived in our Apache Raven canvas-sided camper and a borrowed pickup camper (minus the pickup) for three months while anxiously awaiting the delivery of the promised double-wide mobile home that was to be our residence. Flush toilets, running water, and a makeshift shower were located in an old hunting lodge nearby. I liked seeing the bats in the lodge at night, but I don't remember ever seeing my mother in the lodge after dark! Imagine the mosquitoes, too. In the fall, when temperatures were getting quite cold, we decided to move into a cabin on nearby Island Lake. The double-wide finally arrived in January when the temperature was 40°F. My brother and I had a 90-minute bus ride to school and the nearest loaf of bread was a 30-minute drive down a dirt road. It was at that point in my life when I knew that I preferred an urban lifestyle, but my heart was still in the outdoors.

When we moved to Crab Orchard NWR in 1968, it was like moving to a big city. The refuge had the largest staff in the country. In addition to the traditional refuge management duties, the refuge ran a large farming program, many industries, a water treatment facility, sewage treatment plant, and its own railroad!

A childhood spent on refuges certainly influenced my brother and me to choose college paths related to natural resources. He was a marine biology major, and then went on



*The Uptegraft family "camped out" on Tamarac NWR for three months in 1965 while waiting for their mobile home to arrive.
Cynthia Barry*

to law school. I went to the University of Illinois and majored in applied life studies, focusing on biology and environmental education. I chose an urban trail for my career, which included working for the National Park Service at the top of the Gateway Arch in St. Louis, and then for the Fish and Wildlife Service in Philadelphia, Boston, Washington, D.C., and now in the Regional Office in Portland, Oregon, for the past 13 years.

My father retired in 1986 and lives near Minneapolis, where he is an avid hunter and fisher. I often speak with pride of his career and how it helped shape my life and career. Although I enjoy vacation and work travels to remote areas, I prefer to return to the comforts of my home near a big city. I wouldn't trade my childhood experiences on refuges for anything else in the world!

Cynthia Uptegraft Barry, Assistant Regional Director – Ecological Services, Portland, Oregon

Family Logs 50 Years of Service on Savannah Coastal Refuges

Otis Bentley was a strapping 21-year-old in 1972 when he took his father's advice, gave up a lucrative job as a bartender in the booming resort town of Hilton Head, South Carolina, and became a wage-grade employee at Savannah NWR.

The job transition required a complete transformation of his work skills, as he worked alongside his dad, Harry Bentley, the refuge's tractor operator. Otis recalls his decision to join the Bureau of Sport Fisheries was more of an ultimatum from his father who saw no future in his son's liquor business. The elder Bentley was no stranger to hard work and he obviously felt Otis, his twelfth-born child, needed the character building experience of manual labor.

In colonial days, slaves and itinerant Irishmen toiled on this same land, performing the most grueling tasks such as dike building in a tidal freshwater environment. The years have not diminished the demands on those who must work in this low-country. Mosquitoes grant only a few weeks reprieve from their attacks, usually in the dead of winter. At the peak of the mosquito and black fly infestations, the temperatures usually hover in the high 90's and the humidity hits the 100 percent mark.

In this atmosphere, Otis and his Dad rebuilt levees and constructed new "trunks," wooden water control structures modeled after those used on the old plantations. Father and son planted crops, mowed dikes, burned fields, and performed virtually

Through generations. This relic road grader, recently retired, was operated by Harry Bentley, his son Otis (center), and his grandsons Vic Scott (left) and Jack Bentley (right). Russell Webb/USFWS



every task required to meet the refuge's primary waterfowl management objectives. They were joined by two other Bentley family-members, Otis' uncle, Joe Ford, and cousin Sydney Ferguson.

During his 30-year career, Otis has witnessed changes in management objectives, a doubling of the refuge's acreage and major changes in the way work is accomplished. His father witnessed even greater changes, since the refuge's entire motor fleet once was limited to a TD-9 Caterpillar tractor which had no seat — the operator had to stand while driving; one dump truck confiscated from a bootlegger; and one military jeep with no windshield, windows, roll-bar or top. Needless to say, Otis has no longing for the old days when he served as the "oiler" for his dad on the refuge's relic dragline. Today, he operates an array of heavy equipment including two excavators, assorted bulldozers, a 98 link-belt dragline and a tractor trailer.

The most dramatic refuge changes Otis has witnessed relate to safety in operating all forms of equipment, including chain saws, outboard motors, as well as heavy equipment. These changes have been most beneficial and most appreciated. He vividly recalls how his father would set an old tire on fire and drag it behind a tractor to begin a "control" burn. Nowadays, with drip torches and NOMEX clothing, Otis' fire nightmares have subsided.

Reflecting on his career, Otis is justifiably proud of his achievements, though modest about his role model status in the community. He is a hero among local African Americans in an economically depressed area plagued by limited educational opportunities. He has risen to the rarified rank of a WG-11 dragline operator, one of the most critical staff positions in the Savannah Coastal Refuges, a complex of seven refuges scattered along a 100 mile stretch of coastline from Pinckney Island NWR near Hilton Head, South Carolina, to Wolf Island NWR near Darien, Georgia. His crane work is legend, hence the constant demand for his services at other stations.

Though neither of his daughters chose to follow in their father's footsteps, Otis takes credit for recruiting another generation of Bentleys into work for the Service. Nephews Jack Bentley and Vic Scott now work on the Savannah Coastal Refuges. Jack is an engineering equipment operator and Vic is a tractor operator.

*Patricia E. Metz, Supervisory Refuge Ranger,
Savannah, Georgia*

Passion for Antioch Dunes Inspires New Career

At a time when insects were "just bugs" and riverfront property was "just another place for industrial development," Tom Torlakson saw something different. On a remnant of inland sand dunes along the San Joaquin River in Antioch, California, unique plants and animals were struggling to survive.

Surrounded by sand quarries and industrial development, scientists discovered rare invertebrates, including the endangered Lange's metalmark butterfly. Legless lizards and other animals with desert affinities were observed scurrying into crevices and burrowing in sand. Along the dune slopes and shoreline, rare plants like the endangered Contra Costa wallflower and Antioch Dunes evening primrose, were in full bloom.

The discoveries triggered public interest in protection of the Antioch Dunes. Torlakson made it a personal challenge. As a biology teacher, he shared the wonders of this sandy oasis with his students. He joined with other concerned citizens and ultimately became leader of Dunes for Recreation, which petitioned the Service to protect the Antioch Dunes.

A new career was born of this leadership role. Torlakson ran for Antioch City Councilman in 1978. While on the Council, he spoke ardently in favor of protecting Antioch Dunes. His stewardship of the dunes led him to run for Contra Costa County Board of Supervisors in 1980. That same year, the 55-acre Antioch Dunes became the first national wildlife refuge established for the purpose of protecting plants and insects. Today, Torlakson is a member of the California State Senate and maintains his interest in the Antioch Dunes.

*Rachel Hurt, San Francisco Bay NWRC,
Fremont, California*



*Antioch Dunes NWR, California
Evening primrose
Ivette Loredol/USFWS*

Not Even the Flagpole Is the Same



Key Deer NWR, Florida
Key deer
Hollingsworth/USFWS

It just wouldn't do to have the new 26-year-old Assistant Refuge Manager with a Master's degree in Wildlife Management from Southern Illinois University getting too uppity. So the Refuge Manager at Reelfoot NWR put Walt Stieglitz to work painting the steel flagpole. Thus began Walt's career with the Bureau of Sport Fisheries and Wildlife.

The following year, in 1961, Walt moved on to become Assistant Refuge Manager at Loxahatchee NWR in Boynton Beach, Florida. While his day at Loxahatchee included some administrative duties and eventually some supervision of others, biological tasks took up most of his attention. He managed impoundments for migrating and wintering ducks and geese. He placed wood duck boxes strategically throughout the impoundments and the cypress swamp, using the latest scientific information on wood duck nesting preferences. He conducted waterfowl and alligator surveys, using early, awkward air boats.

The routine was occasionally broken by a trip to one of the many other South Florida refuges administered under Loxahatchee — Sanibel Island (now J.N. "Ding" Darling), which was across the state; the nation's first national wildlife refuge, Pelican Island, up the coast near Sebastian; or the Key Deer NWR, in the Florida Keys.

Walt spent three years at Loxahatchee, and then he stayed on for nine more years in the Southeast Region. He served as an Area Refuge Management Biologist and a Refuge District Supervisor. In 1973, he was tapped to become the first Refuge Manager of the San Francisco Bay National Wildlife Refuge. By then, second son Barry had already taken an interest in what Walt was doing.

In 1975, Walt moved to Washington D.C. to become the Chief of the Branch of Resource Management. Two years later, he was spearheading the Bicentennial Land Heritage Program for the Service. The Service worked together with the National Park Service to launch this initiative, which included an infusion of nearly \$300 million. These funds made it possible to create 500 new positions for the National Wildlife Refuge System. The money bought vehicles, equipment, new offices and visitors centers. Even the old steel flagpoles like the one Walt painted at Reelfoot were replaced by new anodized aluminum ones.

After four more years at headquarters, Walt served as deputy regional director of the Southeast Region. Then he returned to headquarters, first serving as deputy associate director for the National Wildlife Refuge System, and later, as assistant director for wildlife resources.

In 1989, five years before Walt retired, son Barry reported for duty as a refuge manager trainee at, you guessed it, the Arthur R. Marshall Loxahatchee NWR (since renamed for Everglades biologist Art Marshall). Called in to work an hour early, Barry was not asked to paint a flagpole. Instead, he hopped in a helicopter to search the refuge for a missing air boat, and prepare for prescribed burns of the refuge interior. Barry took off from the office parking lot, not 50 feet from the unpainted, anodized aluminum flagpole that replaced the steel pole of Walt's day.

The job at Loxahatchee had changed significantly. Gone were the days when Refuge Managers personally conducted wildlife management activities. Administrative reports had grown longer; law enforcement activity to protect endangered species and combat drug trafficking in South Florida had increased. Unlike the farm tractors and primitive radio collars for telemetry studies of yesterday, today's tools include helicopters, satellite imagery, cellular communications, and complex chemical herbicides to control invasive plants and animals brought here by global trade. It seems that only the air boat, pickup truck, and pumps to move water into impoundments remain the same.

Since Walt's time at Loxahatchee, Congress had passed a number of laws important to national wildlife refuges, including the landmark National Wildlife Refuge System Administration Act of 1966; the Alaska National Interest Lands Conservation Act; and the Refuge System's organic act, otherwise known as the National Wildlife Refuge System Improvement Act of 1997. We also have the National Wildlife Refuge System Centennial Act, heralding 100 years of wildlife conservation in the Refuge System.

In 2002, we are preparing to celebrate the Refuge System's Centennial Anniversary. The year has changed, the agency has a different name, the Refuge Manager's tools are different — not even the flagpoles are the same. But one thing remains constant. The Service's greatest assets are still its people. Whether they are from the same family or not, they remain dedicated to our wildlife conservation mission.

*Barry W. Stieglitz, Division of Conservation Planning & Policy, National Wildlife Refuge System
Arlington, Virginia*

The Gift that Keeps on Giving



*Pea Island NWR/North Carolina
Ken Dyer*

"Life is just too short!" That's how Herb Lewis always answered the question, "Why did you just quit a great career and drop your whole life?"

In 1986, Herb Lewis was a 39-year-old, single, bank manager in Richmond, Virginia. He supervised 38 employees, had a great salary, nice home, and was a member of the "sink" set (single income, no kids). He had purchased a small "beach box" in Nags Head several years earlier, but he just seemed to find it hard to get away enough to enjoy it. So, he quit his job, sold his Virginia home, and moved to the Outer Banks.

In Nags Head, Herb started as a bagger at a local supermarket to "put food on the table." When he saw an ad for a draftsman, he relied on a high school drafting class he had taken and landed the job. From that day forward, Herb worked to live, but he lived to volunteer.

Herb began volunteering to pick up litter on Pea Island NWR. Litter drove him crazy. The fact that people would carelessly toss trash out their car windows or overboard from a boat disgusted him. Because he was frequently on the beach collecting trash, he crossed paths with a refuge biotech working up a sea turtle nest, and he was hooked for life.

A hurricane in the late summer of 1991, dumped more than eight feet of sand on a turtle nest. Refuge staff gave up on the nest, believing the hatchlings would be dead even if the nest was located. But Herb spent countless hours shoveling sand, in search of the lost nest. He pulled a muscle in his back from all the digging, and his back continued to bother him into the Christmas season.

In January, with constant coaxing from the refuge staff, he finally went to an orthopedic surgeon, who referred him to a cancer specialist. Herb had a tumor in his right lung the size of a grapefruit and something had eaten away two of his ribs. Within weeks, Herb was paralyzed from waist down. Refuge volunteers and friends joined together to provide 24-hour care for Herb until he died on April 11, 1992. Herb's ashes were spread in the Atlantic Ocean near the beach he so loved.

In his will, Herb left funds to purchase a new 4-wheeler for the Pea Island Turtle Patrol, which volunteers affectionately began to call "Herbie." And since 1992, Herb's friends from Richmond have had their annual Christmas party in a beach cottage next door to Pea Island Refuge. Instead of exchanging gifts, they pass a hat for "Herbie's turtles" and send almost a thousand dollars a year to the Coastal Wildlife Refuge Society to support Turtle Patrol. Organizer for the group, Tandy Farber says, "Nothing would make Herb happier." So, in memory of Herb Lewis...

"Herbie" rides on...

*Bonnie W. Strawser, Wildlife Interpretive Specialist,
Alligator River/Pea Island National Wildlife Refuge*

I'm Ready for My Close Up, Mr. DeMille



*Kilauea Point NWR, Hawaii
Hollingsworth/USFWS*

For a century, refuges across the nation have served as havens for fish, wildlife and plants, and provided humans with natural places to enjoy outdoor recreation. But there's another side to national wildlife refuges... Just call them "Little Hollywoods"...

"Random Hearts," starring Harrison Ford, was shot at Patuxent Research Refuge in Laurel, Maryland. Photographs taken during that time show Ford perched on his Harley-Davidson, wearing an FWS cap.

Three movies were filmed on refuges in Hawaii: "Throw Momma From The Train" (Kilauea Point NWR), "Uncommon Valor" (Hanalei NWR) and "Raiders of The Lost Ark" (Huleia NWR).

The action movie "True Lies," starring Arnold Schwarzenegger and Jamie Lee Curtis, was filmed in the lower Florida Keys, using Great White Heron NWR as a backdrop. In the movie, a nuclear device obliterates the eastern half of the refuge.

Montana's National Bison Range served as the setting for several early action movies, including "The Big Trail" with John Wayne and "The Plainsman," starring Gary Cooper. A Bison Range maintenance worker named Cy Young reportedly did trick stunts in "The Big Trail," but unfortunately those scenes were left on the cutting room floor.

Portions of "U.S. Marshals," starring Tommy Lee Jones, Robert Downey Jr., and Wesley Snipes were filmed on Tennessee's Reelfoot NWR in 1997. Most of the marsh-woods scenes and chase scenes in boats were filmed on the Grassy Island Unit of the refuge.

In the Northeast, "The Crucible" with Daniel Day Lewis was filmed on the edge of Parker River NWR, off the coast of Massachusetts.

Alabama's Wheeler NWR was used in Walt Disney's 1995 feature film "Tom and Huck." The movie was filmed almost exclusively on the refuge under a Special Use Permit (required for any filming of a national wildlife refuge by someone outside the Service). Filming locations on the refuge included Cave Springs Landing, Rockhouse Bluff, Arrowhead Landing Road and Mooresville Hay Field.

Among moss-draped cypress trees and swamp at Okefenokee NWR, movie-makers have found the perfect setting for a number of films, including "Swamp Water," "Swamp Girl" and "Swamp Country." At what is now nearby Banks Lake NWR, the movie "Gator" with Burt Reynolds was filmed.

And at Guadalupe-Nipomo Dunes NWR on the central California coast, cultural resources include the "Lost City of Cecil B. DeMille," the original movie set where the 1923 version of "The Ten Commandments" was filmed. After filming was complete, DeMille ordered the set dismantled and buried.

According to refuge lore, the set for the "City of the Pharaohs" scenes, which took more than two months to construct, was more than 700 feet wide and towered 120 feet in the air. It featured statues of the pharaoh Rameses that stood 35 feet tall and used 35 tons of plaster. Movie buffs travel to the refuge to explore the dunes in search of the lost city — and perhaps participate in some wildlife-dependent recreation.

Refuges have also been used as backdrops for television productions. In addition to the many local travel or nature shows that have been filmed on refuges, classic wildlife show "Mutual of Omaha's Wild Kingdom" shot at least three episodes at the National Bison Range. The Bison Range also was the set of a segment of the television classic "Lassie;" "Lassie and the Buffalo" was filmed there in 1974.

Burt Reynolds and Ricardo Montalban (Mr. Rourke of "Fantasy Island") visited Florida's Loxahatchee NWR to film an episode of the 1980's action show "B.L. Stryker."

Watch a "movie of the week" and you might see a refuge... South Carolina's ACE Basin NWR was used by the Showtime cable network to film a movie in 1993, and in the mid-90's a TV broadcast network shot a re-make of "The Yearling" using the old plantation buildings on ACE as a fictional town. ACE Basin was also used as a site of a Cadillac commercial.

*Rachel F. Levin, Public Affairs,
Minneapolis, Minnesota*

The Refuge System: A Personal Association

About 1,500 miles west of Anchorage, a brilliant jade green island juttied out of the fog-choked Gulf of Alaska. Buldir Island is part of the Aleutian Islands NWR and is home to millions of nesting seabirds. It has played an important role in the recovery of the Aleutian Canada Goose, and its underwater substrate provides tremendous foraging opportunities for numerous marine fish species. I saw the small island in June 1977 from the deck of a Soviet fishing trawler while monitoring the commercial fishing catch in the western Aleutians.

I recently recalled the scene of Buldir Island as I stood on a wildlife viewing observation platform at the Minnesota Valley NWR, located in suburban Minneapolis. Here, I observed a fully loaded Northwest Airlines 747 strain to gain altitude, interrupting the quiet of the afternoon, as it took off from the adjacent Minneapolis International Airport. What a stark contrast: Buldir, noisy seabirds, the howl of Arctic winds and other unique sounds produced by nature; versus Minnesota Valley and the background noise of humanity.

As I watched the jet disappear into the clouds, I understood what is great about the Refuge System. It's the diverse and intricate pieces of land and water, like Buldir Island in the Aleutians and "the Valley" in Minnesota, that are so different, but when linked together form the greatest conservation network in the world.

Having worked for 24 years as a biologist for the Service, both in Fisheries and Ecological Services, my professional experiences — salmon research on the Kenai, Kirkland's warbler recovery activities with Seney, habitat enhancement in the Upper Mississippi, common tern nest surveys on the Michigan Islands NWR — have served as constant reminders of the importance of the Refuge System for the long-term protection of fish and wildlife.

But I am also constantly reminded of the Refuge System's importance to people. One of my fondest memories is when I introduced the Refuge System to my oldest daughter as she developed a sixth grade science fair project which compared bird numbers and diversity at the Minnesota Valley and Egmont Key NWRs. I've hunted and fished with my father, brothers, and close friends over the years at many refuges including Kenai, Kodiak, Blackwater, Delta, Ding Darling, Prime Hook, and Bombay Hook.

I've seen the welcome mat out for the public to bird-watch and hike at Loxahatchee, Chincoteague, St. Marks, and Horicon NWRs. I've watched on TV as Service biologists welcomed whooping cranes from an experimental program as they arrive at Chassahowitzka NWR. The Refuge System offers front row seats for the American public to some of the finest outdoor recreation opportunities in the world, keeping the interests of fish and wildlife first.

Personally, the Refuge System has offered me a sense of great pride for having been associated with it professionally, protecting unique habitat types and adding land to it.

*Charlie Wooley, Assistant Regional Director – Ecological Services,
Minneapolis, Minnesota*



*Setting decoys
Milt Friend/USFWS*

*Chassahowitzka NWR, Florida
Ryan Hagerty/USFWS*



A Friend with History

I was minding my own business when one day in 1988 I was asked to be president of Friends of Back Bay NWR. I thought at the time this would be a short-term local commitment, but it turned out to be the beginning of a long journey of environmental and conservation advocacy that led me from Virginia Beach to Washington, D.C., and allowed me to see firsthand what a difference a local support group could make to a national wildlife refuge.

Friends of Back Bay National Wildlife Refuge was formed in the 1970's to fight a proposed highway through the Back Bay NWR, that would have connected the fast growing city of Virginia Beach, Virginia, with the emerging Outer Banks of North Carolina and devastated wildlife habitat on Back Bay refuge, a haven for migrating waterfowl established in 1938. After helping to defeat this highway, Friends of Back Bay became inactive.

In 1988, recognizing the importance of protecting marshes, swamps, uplands and critical edge habitats surrounding Back Bay, the Service proposed expanding the refuge to provide a buffer against the encroaching development of Virginia Beach.

We began to garner local and state support for this project by dispelling rumors.

Today, things are quite different. There are people to help Refuge Support groups, including the National Wildlife Refuge Association, on whose board of directors I have served since 1995. Recognizing that citizen support groups were vital to the continued growth and health of the refuge system, in October 1996 the Refuge Association launched its Friends Initiative program.

In January 1997, a group of citizens and representatives from the Service met in Virginia Beach to discuss the needs of Friends groups. The Refuge Association and the Service jointly produced a handbook called *Taking Flight — An Introduction to Building Refuge Friends Organizations*, and began conducting workshops across the country to show refuge supporters how they could establish their own Friends Groups.

Capping off this outreach and education effort was the National Refuge Friends Conference in February 2002. Sponsored by the Refuge Association and the Service, the Friends Conference brought together hundreds of refuge supporters from throughout the country. They left armed with a renewed spirit, a crucial thing as we approach the refuge system's 100th anniversary.

I have grown as a refuge advocate along with the Friends Initiative program. But more importantly, I have been exhilarated by my acquaintance with other like-minded individuals trying to protect our 540 refuges. As volunteers we should all be proud of our work as we help the Service balance the wants of people and the needs of wildlife.

*Molly Brown, President, Friends of Back Bay National Wildlife Refuge,
Virginia Beach, Virginia*



Back Bay NWR, Virginia
Sand crab
USFWS



Back Bay NWR, Virginia
USFWS

This Woman Came Alive with the Wildlife Refuge System



When I was 15, I had occasion to make my first visit to an NWR. The refuge manager there took the time to explain the diversity of his duty and I left that encounter absolutely certain that this was what I wanted to do for a profession. I wonder if we recognize that as little as five or ten minutes of our time could possibly be a life-changing experience for some of the young people who visit our refuges?

*Jay Banta
Fish Springs NWR*



In an era when even some natural resources agencies did not have women's uniforms, Bonnie Strawser bucked the odds, launching her career with the Service.

Strawser was only the second woman — after her mother — in her family to graduate from high school and the first ever to earn a college degree. Strawser earned her living as a math teacher in Petersburg, Virginia, while also running a nature study day camp during the summer. Always interested in environmental education, she applied for a position at Pocahontas State Park in Virginia as a leader on horse trails; what she got was gate attendant.

Undaunted, Strawser took on the position with energy and enthusiasm. The fact there were only uniforms for men — and she had no intention of wearing one of them — did not stop her. It was the late 1960's, and Bonnie decided the state park's name should give her guidance. So she opted to dress as Pocahontas herself, and as such, hosted state park activities. It wasn't long before her education, knowledge, enthusiasm and outfit, garnered attention. When the state park's naturalist left, Bonnie stepped into that position and ran the nature center.

She applied later to the National Park Service which was hiring women and spent the next few years teaching, earning a master's degree in environmental education and forestry, and visiting national parks. During the school year, she taught biology and math at the Navaho Indian Reservation in Tuba City, Arizona.

Through a chance meeting with a refuge employee, Strawser discovered national wildlife refuges and knew she'd found her home. She was hired as outdoor recreation planner for Iroquois NWR near Buffalo, New York.

"I spent 11 months freezing to death," Strawser explains, "I couldn't run because of the cold, so I took up cross country skiing. By the end of 1979, I had had all the cold I wanted. So on January 1, 1980, I came to Pea Island, on the Outer Banks of North Carolina."

Before her second year at the refuge was over, Strawser had corralled her first intern, starting a program still in existence, which helps keep down costs of maintaining the refuge while offering new workers in the field experiences to last a lifetime.

Since then, Strawser has also launched successful volunteer groups, the award-winning Coastal Wildlife Refuge Society, the Friends group for Pea Island and Alligator River NWRs, and most recently, a Workamper program which gives retired people the opportunity to volunteer on the refuge in exchange for lodging.

*Muriel Smith, volunteer;
Eastern Neck NWR*

Ninety three year old Luther Goldman is one of our oldest surviving former refuge managers. During his long career with the Service, Luther became one of our most prolific photographers. Luther initially began photographing refuges to illustrate narrative reports but his natural gift for capturing wildlife has made him one of our most famous and most reproduced photographers. One of the Service's youngest photographers, Ryan Hagerty, recently visited Luther in his Maryland home to talk cameras, film speeds, and the joys of wildlife photography. Our Service photographic tradition continues.

*Mark Madison, Historian,
Shepherdstown, West Virginia*

Why Urban Refuges Matter



I have been fortunate to cross paths with many people in my career. These are times to share joys and sorrows, success and failures, dreams and ideas. Families share special bonds. Ours is a passion and sense of place in this system of lands.

*Doug Staller; Manger,
Tewaukon NWR complex*

Had you asked me two years ago — while working at Kodiak National Wildlife Refuge and seeing more bears and salmon than people — if I could see myself working at an urban refuge, I would have probably told you no. But now, as I stop to move my eighth turtle of the day from harm's way, I thought to myself how fortunate I was to be working at Crab Orchard NWR.

Crab Orchard was created in 1947 from surplus lands of the War Department and adjacent Soil Conservation lands. It is an experiment on how people and wildlife can co-exist. Along with an active Superfund site, an ordinance factory that employs hundreds of workers and an adjacent maximum security federal penitentiary, Crab Orchard is Illinois' first designated wilderness area and attracts more than one million visitors a year. Visitors come to Crab Orchard for a variety of refuge activities such as fishing, wildlife observation, camping, swimming, picnicking, sailing and water skiing.

So why was I here? Why the radical change? Why could I be so comfortable at a refuge so far from the ordinary vision of a National Wildlife Refuge? Was it because Crab Orchard has the beautiful vistas and spectacular views? Not really. Was it to save an endangered or threatened species? Nope. Perhaps the re-introduction of an expatriated trust species to its native home range? That wasn't it either. "If I had wanted to see that many people, I'd have joined the Park Service," a fellow co-worker at Kodiak told me. No one I spoke to seemed to want the urban refuge experience and the challenges it presented. I pulled off the roadway once more overlooking Playport Marina, one of three such Refuge facilities, determined to give myself an answer.

Growing up in downtown San Francisco and like so many other kids, I never knew the joys of wildlife and wild places. Surrounded by concrete and suburbia, my idea of the great outdoors was the neighborhood park and an annual trip to the zoo.

When I was ten, my father married a woman whose passion for the outdoors opened up a whole new world for us. Journeys that led me from the cities to the country, from the country to the wilds, and the wonderful career I have today.

As I pulled back onto the refuge's 50-plus miles of roadway, I began to think that maybe it was my turn to share the passion, to reach those folks who, if not for our urban refuges, might never venture far from home. It was my passion now and I wanted to spread it around.

Urban refuges have a great responsibility to spread the word, to be the portal and share the story of the National Wildlife Refuge System. They are a necessary interface between humans and the environment. A visitor to Tinicum or a San Francisco Bay may have never know the natural world before their visit. They may never visit the Midway Atoll, or Fish Springs, but that's not the point. First impressions count, lasting impressions vote.

Communities protect their urban refuges. It is everywhere you look at Crab Orchard. With over 25,000 volunteer hours, an active friends support group and numerous partnerships to protect and interpret Crab Orchard's special resources, volunteers and staff help this refuge live up to its responsibilities as an urban refuge.

I turned into the Visitor Center parking lot just as a school bus off-loaded its students for a visit. Walking in the back door I think it hit me. My time at this refuge has made me realize that Crab Orchard National Wildlife Refuge is among the System's most wonderful places. It does have an important trust species...and they just walked in the door.

Now if I could just teach the turtles to stay off the road.

*Jonathan Schafler; Crab Orchard NWR,
Marion, Illinois*

A Family of Volunteers

I'm very blessed with a large family — 6 children and 11 grandchildren and a wonderfully supportive wife. My granddaughter, Angela (now 11 years old), has been my traveling and fishing partner since she was three years old. She was familiar with Forsythe Refuge before I started volunteering as we would come here to take pictures. She asked if she could be a volunteer too. Angela now volunteers at the Refuge whenever she has vacation from school. She helps with mailings and other administrative projects. She has now convinced her six-year-old cousin, Corey, that volunteering at the Edwin B. Forsythe National Wildlife Refuge is "the thing to do."

Corey's mom, Amy, volunteers her computer expertise in helping me write letters for the Refuge's Friends Group.

My son Ronny, a union floor covering installer, has volunteered his weekends to lay carpeting in the newly renovated Volunteer House.

Another son, Ty, a licensed electrician, for the past couple years has helped put up a banner across the main road to promote the Refuge's celebration of National Wildlife Refuge Week. Ty has also volunteered to do electrical work in the Volunteer House.

Ed Jones

I'm a retired Egg Harbor Township police officer and assistant manager at the Margate Bridge Company. In June of 1999, I was involved in a motor vehicle accident and found I could never work again. I started moping around the house getting fat and stupid — feeling sorry for myself.

One day, while reading *Outdoor Photography*, I saw an article on the Edwin B. Forsythe National Wildlife Refuge — a place that my wife, Carol, and I had been going to for years with our children and now our grandchildren. I called the Refuge to see if they would be interested in the article.

When I brought the article to their office, I saw a volunteer brochure that said they needed volunteers for photography. I thought I can at least do that. I began by taking photos of the native wild flower garden just being started by the refuge's Senior Volunteer Group.

For a while, I was volunteering just one day a week with the garden club, but I heard the staff talking about how backlogged things were. I offered to come to the Refuge more than one day a week to help with other things. It wasn't long before I started coming on a daily basis. It wasn't long after that, that the staff gave me my own office and business cards. They jokingly said I spent as much time there as they did.

About a year ago, I started an annual photo contest. What started as an idea has now blossomed into a yearly fund raiser for the Friends of Forsythe. The photo contest prompted many inquiries about a photo club. What should have started out as a few people interested in photography grew to approximately 100 members. I'm very proud of this success.

None of this would have been possible without the support and encouragement of the staff. They have given me the opportunity to be creative. They are always supportive and willing to listen to my ideas and opinions, answer questions, and provide direction and guidance. In fact, all the people with whom I've spoken, throughout the entire National Wildlife Refuge System, are the nicest people I've ever dealt with my entire life.

The refuge staff is very protective of me. They are concerned for my safety, above and beyond normal concerns because of my health conditions. Most important to me, I have never walked out of the office without a very sincere thank you from everyone to whom I have said good bye.

I feel far more important here than "just" a volunteer. I know that I'm appreciated, and for the first time in my life, I look forward to coming to "work" each day!

*Ed Jones, volunteer, Edwin B. Forsythe NWR,
Egg Harbor Township, New Jersey*



Centennial Thoughts from Middle Age

Did You Know . . . ?

The driest refuge is Kofa NWR, with an average rainfall of 1 to 1 1/2 inches a year.

Wes Martin, currently manager of the Lower Colorado River Complex, became the first modern-era African American refuge manager in 1978.

Joe Rodriguez, currently manager at Las Vegas NWR, became the first modern-era Hispanic Refuge Manager in 1979.

Choctaw Nation member Joe White, recently retired manager of St. Marks NWR was the first known Native American Refuge Manager.

Service historians believe Linda Gintoli was the first modern-era female refuge manager.

From the visitor question box at Wichita Mountains NWR: "At what season do the deer turn into elk?"

I write this epistle from a time, place and position I did not seek. Beyond all those remarkably unremarkable memories of my years as a tech, biologist and assistant manager, I sit with all my electronic collars and choke chains — e-mail, telephone, pager, planner. These accouterments are apparently necessary for the modern refuge manager to schedule meetings with elected and appointed officials, reporters, seemingly untold stakeholders accompanied by their legal counsel. All are truly necessary to keep in touch with the refuge staff, they who save this dirt, love this land. They are our infantry, holding ground, in touch with the community of land. I only fly "air cover": I provide logistics, and, if I succeed, leadership and vision. I still live as a "refuge man," but I live vicariously through the "best and brightest" that I am privileged to serve.

Mississippi kites, a baker's dozen, wheeling, twisting — a double helix, defining grace, aerial feeding on 10,000 dragonflies over a marshy opening among verdant, towering oaks. Wonder if cherubim fly like that — not likely. A hen loggerhead, Jurassic instincts, digging the incubation chamber for two gallons of promise, 146 leathery eggs drip from the ovipositor. I'm on a black night barrier beach, black surf thunder in my ears, glowing barnacles on her shell, her back like a kitchen table, a whiff of the Spartina cordgrass marsh when the breeze wanders. Wading the lotus, purple gallinules, least bitterns, king rails, a virtual covey rise with each boot-sucking step, skulking hidden birds that few others see, lavender and green and buff, rufous and gray fluttering up, side-slipping back into cover.

Blood-orange coals glow in my shaft of light, 12 full inches between the eyes and nares, big gator, the night sweat dripping, shad fly silver from the slick water, whack the side of the john boat. Thick as your forearm, cotton mouths, coiled like spaghetti on last night's beaver that I'm supposed to tear out of the ditch. Buttonbush swamp, scattered cypress and willow, hundreds — a thousand — birds, big birds: white, blue, piebald-yellow beaks, black beaks, curved beaks, black legs and yellow feet, black feet, yellow-green legs; croaking, squawking, bleating. Big suckers stacked like cordwood in a crystal riffle. Twenty, no, 40 eagles, in the white pines above the river, scores more in a kettle above that, a funnel cloud of eagles as high as the sky is blue.

Divers, mostly ring-necks, but big bluebills and redheads too, even cans, falling from a lead-colored ceiling, for hours, thousands and thousands and thousands of screaming wings, shredding the firmament, afterburners, Canada behind, Dixie ahead, teeming wild rice beds beckon, settling in to refuel. After dark, I hear the frenzy, the roar of migration, for miles.

Wolf tracks: A whole real live wolf, two wolves. It's so white and so damn cold that all energy — sound, heat, motion — just gets sucked out of the air. Absolute silence, only the red stain, scattered hair, hooves and rumen contents — frozen like an alfalfa block. The deer died, the wolf lived. Wonder why they don't eat the hooves too? No marrow. A big buck fisher, silver-tipped, tall as a fox, 10 yards, he looks right through me. Great gray owl hunting striped gophers in my yard. I pass close, I could pet his head. The head turns, the yellow eyes meet mine. I'm too big for him to eat, and am therefore ignored, irrelevant, the land manager without consequence to the great bird.

My fingers peck out just a few treasured experiences, blessings of the 25 years since I first set foot on the Refuge System, started working to save dirt. I have seen and heard, smelled and felt the wonders of wildlife and wild places in ways that relatively few Americans can imagine. Yet, what is remarkable is that my experiences are unremarkable. They are not extraordinary for those few fortunate enough to work on National Wildlife Refuges. Heck, I haven't even done Alaska. My sisters and brothers throughout Refuges see things daily that I can only dream about.

*Dean Rundle, Manager, Rocky Mountain Arsenal NWR,
Commerce City, Colorado*



Pelican Island NWR, Florida
George Gentry/USFWS

Cover photo: Ding Darling NWR, Florida
George Gentry/USFWS

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Fish & Wildlife News

Executive Editor: Megan Durham
Editor: Nicholas Throckmorton

Submit articles and photographs to:

Nicholas Throckmorton
U.S. Fish & Wildlife Service
Room 3353
1849 C Street, NW
Washington, D.C. 20240
202/208 5636
Fax: 202/219 9463
E-mail: Nicholas_Throckmorton@fws.gov

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